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ABSTRACT

This self-paced workbook presents basic information about features of the "AppleWorks" software package, provides practice materials for beginners, discusses features available in an integrated three-application package, and provides guided hands-on activities. The applications include the spreadsheet, the word processor, printer options and using the clipboard, and the database. Each chapter is self-contained but this workbook is designed to be used in conjunction with an accompanying disk (suitable for an Apple computer only) that contains introductory files for each activity. Lessons cover: (1) operational features of "AppleWorks," spreadsheet features, and using the spreadsheet for grading; (2) making corrections on the word processor, adding/replacing characters, deleting/moving words and blocks of text, replacing the text, and creating a sample document; (3) printer options, including completing a questionnaire, changing a file name, word processor and spreadsheet options, copying text through the clipboard, and transferring spreadsheet information into a word processor file; and (4) an overview of the database and printing single records/reports. Common beginner questions are answered first, and a version of each application is provided in a step-by-step approach designed for use by pairs of workshop participants. Screen shots are also provided with examples taken from the home or school setting. Reprinted articles from "The Computing Teacher" journal which describe how teachers have used spreadsheets, database, and word processor applications for instructional or personal use, and an index for each application are provided. (DJR)

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APPLEWORKS™ FOR EDUCATORS

A Beginner's Workbook

ED274333

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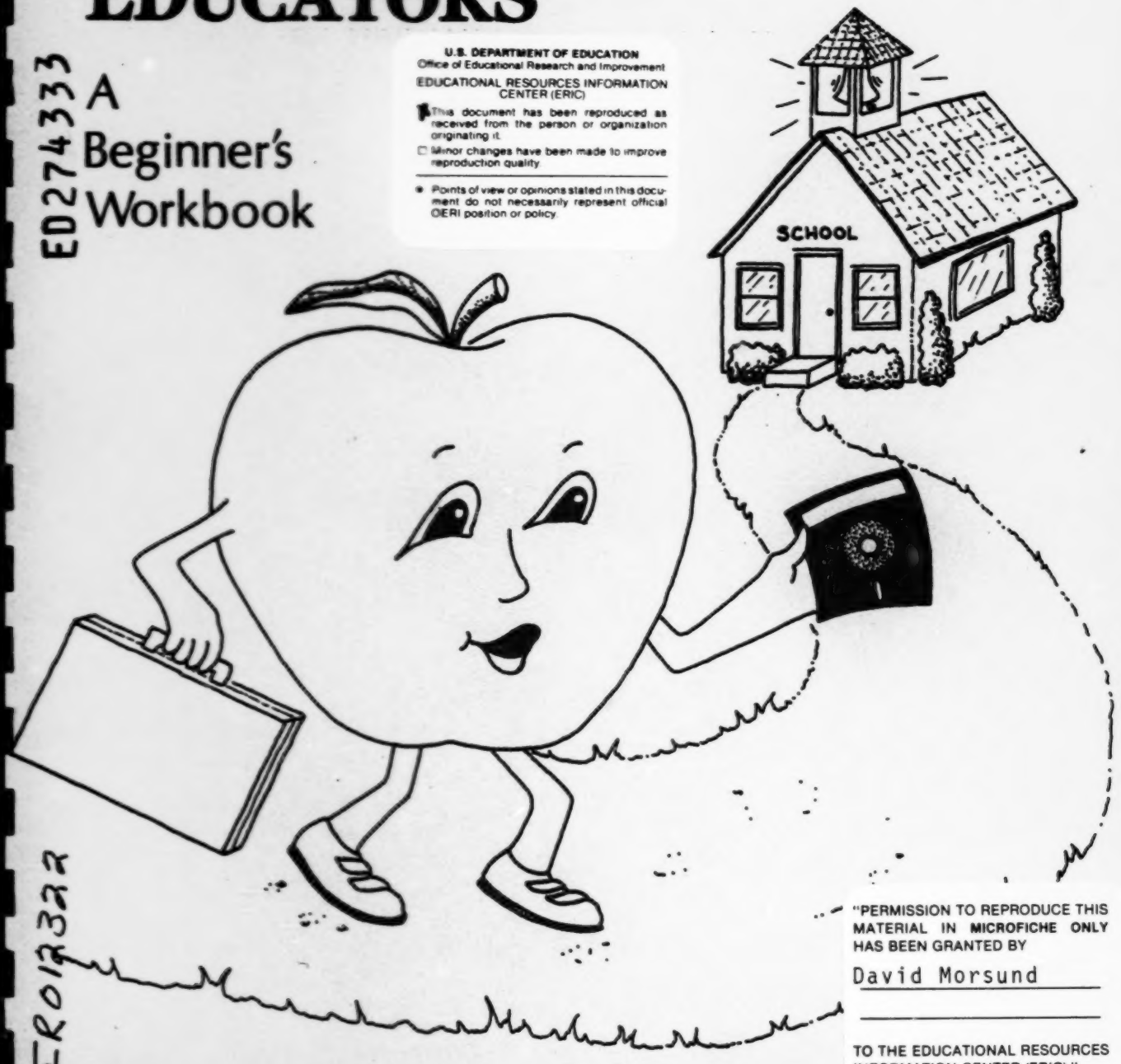

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About the Author

Linda Rathje is the Software Review Editor for *The Computing Teacher* journal. She has completed a masters in computer education. A former secondary teacher, she has been teaching *AppleWorks* to school personnel for the past two years. She developed this workbook to be used in workshop and classroom settings.

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AppleWorks for Educators

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INTRODUCTION

I have used the materials in this workbook in workshops and introductory-level computer application classes over the last two years with K-12 teachers, administrators and school clerical staff. With the level of computer access and experience varying greatly in each class -- some people having never initialized a data disk, others regularly using one or more software packages -- self-paced materials became essential for effective use of class time (and instructor survival). Teaching a program involving three major applications to teachers who are tired after a full day's work, or who have given up a weekend day, has been a challenge. My solution has been to develop light-hearted materials that provide:

* Enough practice with the basic AppleWorks features for people to begin to use the program independently;
* Exposure to the broad range of features available in an integrated three-application package; and
* Guided hands-on activities to get the class started right away, allowing the instructor to discuss individual concerns and trouble shoot problems.

Common "beginner" questions are answered first. A no-frills version of each application is provided in a step-by-step approach designed for use by pairs of participants. Lots of screen shots are provided, with examples taken from the home or school setting rather than from business. Each of the three application sections includes readings reprinted from The Computing Teacher journal, describing how teachers have used spreadsheet, data base and word processor applications for instructional or personal use.

This workbook is not intended to answer all questions about every application. Instructors who use these materials will need to supplement them with demonstrations, questions to generate discussion and problem solving activities once the participants have mastered a particular application.

Each application is discussed in its own chapter. In my overview class, beginners first work with two simple models to examine basic spreadsheet features and gain familiarity with AppleWork. I have included activities in Chapter Two for beginners with limited word processing experience. Printer options -- especially the ones which I have received repeated phone calls about -- are covered in Chapter Three. I have found that by the end of the course most people are able to examine the data base in considerable detail and can comfortably use the clipboard. As each chapter is self-contained, the order for introducing the applications can vary.

Introductory files for each activity are provided on the accompanying data disk. By making a copy of the data disk before you begin, you can repeat the activities outside of class.

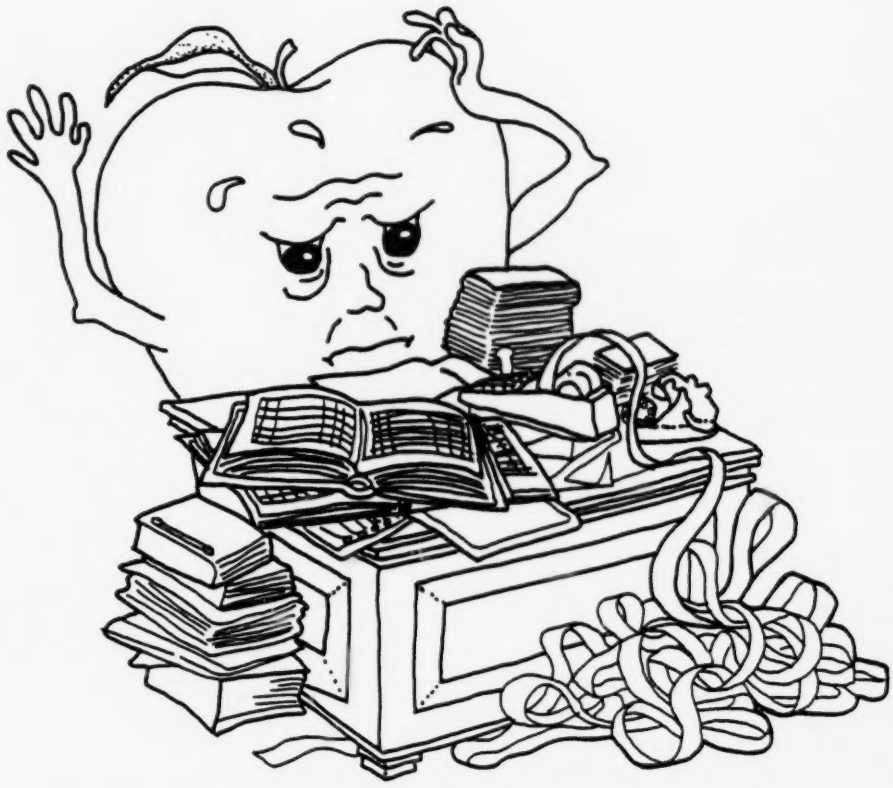
I would like to thank Jack Turner, Computer Coordinator for the Eugene 4-J School District, and Sam Miller, Curriculum Specialist with the Lane Education Service District, for their support and encouragement, and the staff at ICCE for their patience and extra attention to the seemingly endless details of this book. A very special thanks to my two best friends (and proofreaders), Linda Ague and Art Rathje.

--Linda Rathje

	A	B	C	D
1		Inventory	Cost	TOTAL
2	rulers	37	.25	B2*C2
3	erasers	52	.20	B3*C3
4	pee-chees	24	.40	B4*C4
5	notebook	30	2.75	B5*C5
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				

A10: (LABEL)

SPREADSHEET



PART 1

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THE SPREADSHEET

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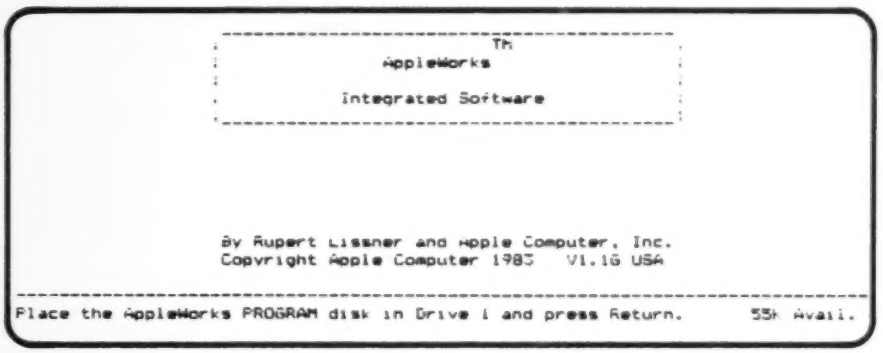
HOW TO LOAD THE APPLEWORKS™ PROGRAM

The AppleWorks program is split into two parts:

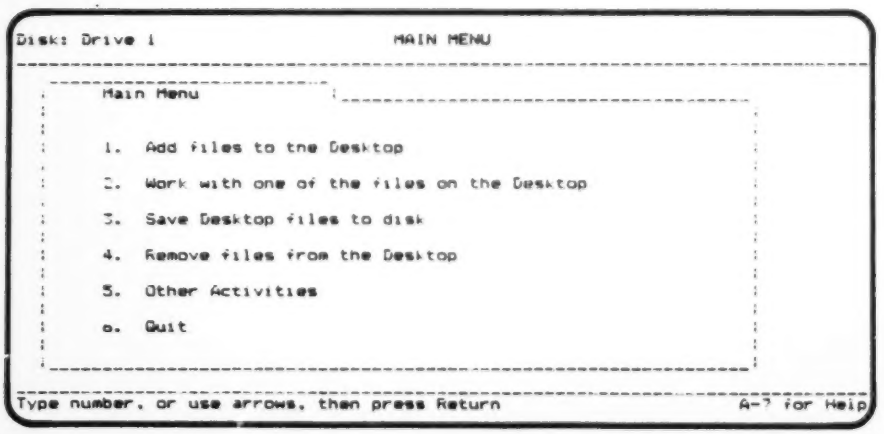
Part 1, the "AppleWorks Startup" is on one side of the disk.

Part 2, the "AppleWorks Program" is either on the back side of the same disk or on a separate disk.

1. Put the AppleWorks Startup disk in drive 1.
2. Put the data disk, that came with this packet, in drive 2.
3. Turn on the monitor.
4. Turn on the computer.
5. If it is already on, hold down the open-apple and CONTROL keys, and tap the RESET key.
6. The COPYRIGHT SCREEN should appear:


AppleWorks™
Integrated Software
By Rupert Lissner and Apple Computer, Inc.
Copyright Apple Computer 1983 V1.1G USA
Place the AppleWorks PROGRAM disk in Drive 1 and press Return.
55k Avail.

7. Remove the Appleworks Startup disk from drive 1.
8. Insert the Program disk in drive 1, and press RETURN.
9. Type today's date using the form shown on the screen.
10. Press RETURN.
11. The AppleWorks MAIN MENU should now be on the screen:


Disk: Drive 1
MAIN MENU
Main Menu
1. Add files to the Desktop
2. Work with one of the files on the Desktop
3. Save Desktop files to disk
4. Remove files from the Desktop
5. Other Activities
6. Quit
Type number, or use arrows, then press Return
A-? for Help

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PART 1 : HOW TO CREATE A SPREADSHEET "FROM SCRATCH"

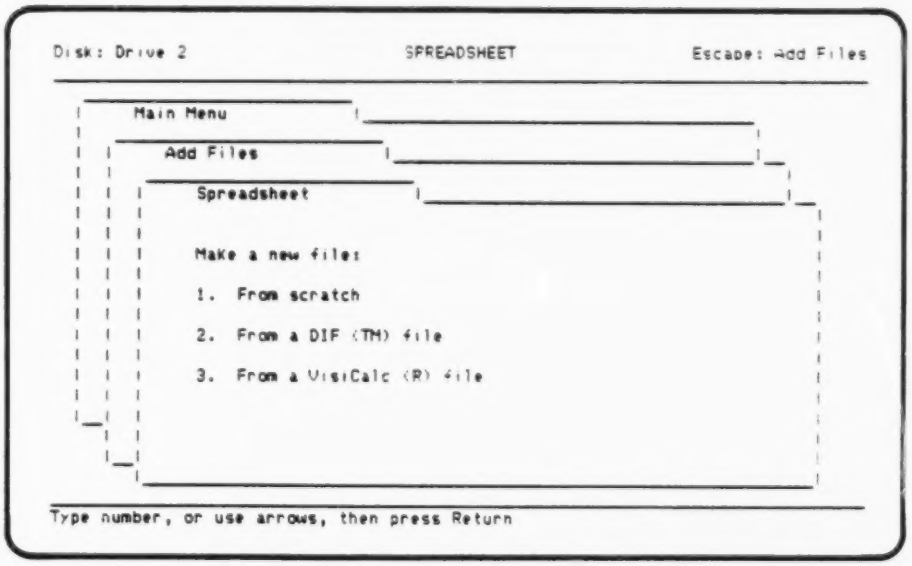
In this activity you will practice entering and changing information in a spreadsheet. The examples are simple and serve as opportunity for you to become acquainted with what a spreadsheet looks like and what a spreadsheet can do.

NOTE: "Select" means to highlight an option, then press RETURN.

"Enter" means to type in the information. If you make a mistake, use the DELETE key to correct, then press RETURN to confirm.

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 5. Make a new file for Spreadsheet — press RETURN
4. Select : 1. From scratch — press RETURN
5. Note the blinking cursor at the bottom of the screen.
6. For filename, type: SS PRACTICE — press RETURN

Each time a new menu selection is made, another menu appears on the screen. Your screen should now display the "Spreadsheet" Menu -- which is overlaying the "Add Files" and "Main" Menus:



7. Press RETURN.

10

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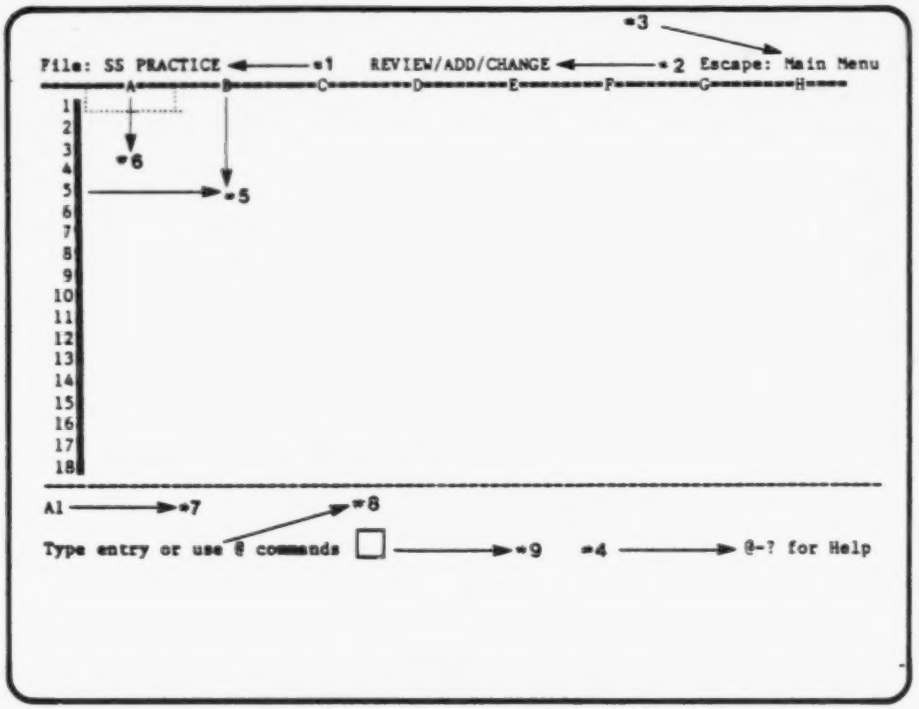
8. An "empty" spreadsheet should now be on the screen:



#1. The name of your spreadsheet file ("SS PACTICE").

#2. The screen heading indicating a section of the AppleWorks program. On this screen you can review, add or change information.

#3. This screen heading indicates which section of the program will be displayed if you press the ESC Key.

#4. A reminder that pressing the open-apple and question mark keys will display a Help screen.

#5. Rows and columns divide the spreadsheet into a grid pattern on the screen. COLUMNS are identified by letters. ROWS are identified by numbers.

#6. The highlighted bar on the screen is the spreadsheet CURSOR and indicates your place within the spreadsheet grid. The CURSOR is in column A, row 1 -- its position is referred to as CELL A1.

#7. The CELL INDICATOR gives the cell number of the cursor's position. As you enter information for a cell it will first appear in the space BELOW the cell indicator (see #9).

#8. The spreadsheet PROMPT. Instructions for working with the spreadsheet appear in this area.

#9. The blinking cursor indicates where labels, values, formulas or AppleWorks commands are entered. Your typing appears at this cursor.

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PART 2 : HOW TO ENTER INFORMATION INTO A SPREADSHEET

There are two main classifications of spreadsheet information:

LABELS are entries that begin with a letter.
They are often used for column & row headings:

NAME COST GRADE DATE

VALUES are entries that include:

NUMBERS	FORMULAS	FUNCTIONS
136	+A1*B1	@SUM(A1...A5)
$4000.	+E1+E2-E3	@AVG(B1...B10)

1. Type the following names in the cells indicated. Use an ARROW key to move the cursor. Since each entry begins with a letter the CELL INDICATOR will show these as LABEL entries. Type:

LINDA	in cell	A1	press RETURN
PAT	in cell	A18	press RETURN
GINNY	in cell	H18	press RETURN
SARA	in cell	H1	press RETURN

NOTE: To enter a NUMBER as a LABEL, you must first press the shift key AND the quote (") symbol before typing the actual label. Then AppleWorks will treat whatever follows as LABEL information. Type:

"3RD PER.	in cell	A6	press RETURN

2. Type the following numbers in the cells indicated. When typing numbers NO QUOTES NEED TO BE TYPED. Each entry begins with a number, so the CELL INDICATOR will show these as VALUE entries.

10	in cell	B1	CAREFUL !!
20	in cell	B2	Use the zero - not the letter O
1050	in cell	B3	
10	in cell	C1	
2	in cell	C2	
10	in cell	C3	

3. Type the following FORMULAS in the cells indicated. Note that FORMULAS must begin with the plus (+) or minus (-) sign, or a decimal point (.). This will distinguish formulas from label entries. Note what appears in the cell when you press RETURN. Type:

+B1+C1	in cell	E1
+B2+C2	in cell	E2
+B3+C3	in cell	E3
+B1+B2+B3	in cell	B7
+C1+C2+C3	in cell	C7
+E1+E2-E3	in cell	E7

4. AppleWorks uses the slash (/) as the symbol for division and the asterisk (*) for multiplication. Type:

+B1+C1/E1	in cell	H12

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PART 3 : HOW TO EDIT

In PART 2 you pressed RETURN or an ARROW key to confirm an entry. If you change your mind -- and have not yet confirmed the entry -- you can press the ESC key to completely erase what has been typed. The word "Label:" or "Value:" will also be erased from the bottom of the screen.

There are several ways to make changes in a completed cell.

1. By entering new information directly into a cell:
    1. Move the spreadsheet cursor to cell A1.
    2. Change the name LINDA to LEAH by typing the new name at the bottom of the screen.
    3. Note that LEAH first appears in both cell A1 AND at the bottom of the screen, and LINDA continues to appear on the cell indicator line.
    4. Press RETURN or an ARROW key.
       The label LEAH should now appear in cell A1 and on the cell indicator line.
2. By using the open-apple "B" command:
    1. Move the cursor to cell B1.
    2. Press open-apple B (to BLANK OUT).
    3. Select: Entry.
       Note: "Entry" means one cell.
    4. Press RETURN.
       All contents in cell B1 have now been erased.
    5. Next type the number 5000 at the bottom of the screen.
    6. Note that the number 5000 first appears at the bottom of the screen, but not in the cell.
    7. Press RETURN. The new number will now be in cell B1.
3. Or, by using the open-apple "U" command:
    1. Move the cursor to cell H1.
    2. Press open-apple U (to UNDO).
    3. Note the cursor at the bottom of the screen.
    4. Use an arrow key to move that cursor to the end of the word.
    5. Tap the DELETE key to erase the letters A and R.
    6. Type MANTHA.
    7. Press RETURN. SAMANTHA should now be in cell H1.

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8. Move the cursor to cell C7 to change the formula.

9. Press open-apple U.

10. Use the delete key and change the formula at the bottom of the screen to show: +C1+B2+C3. And press RETURN.

PART 4 : HOW TO CHANGE COLUMN WIDTHS

Spreadsheet column widths are pre-set at nine characters. However, they can be increased or decreased.

1. Move the cursor to cell D9.

2. Press open-apple L (LAYOUT).

3. Select : columns press RETURN

4. Press RETURN. We will only change column D's width.

5. Select : column width press RETURN

6. Hold down the open-apple key and tap the left arrow key to reduce this column to one (1) character.

7. Press RETURN.

8. Move the cursor to cell A9.

9. Press open-apple L.

10. Select : columns press RETURN

11. Press RETURN, again. We will only change column A's width.

12. Select : column width press RETURN

13. Use the open-apple and right arrow key to increase this column by 4 characters.

14. Press RETURN.

15. Type the name ANNA-MARIANA in cell A9.

PART 5 : HOW TO SAVE YOUR WORK

> The spreadsheet information is in the MEMORY of the computer. When the computer is turned off this file will be gone. If you want to have a copy of this spreadsheet file to work on later, you will need to save your work on your DATA DISK.

1. Press open-apple S.

When the disk-use light is off you will have two copies of this spreadsheet, one in MEMORY and one on the DATA disk.

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activity 2 BASIC SPREADSHEET FEATURES

PART 1 : HOW TO GET A SPREADSHEET EXAMPLE FROM THE DATA DISK

1. Press the ESC key and begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. From the current disk — press RETURN
4. Select : --> GYM TEAM SCORES — press RETURN
5. The following spreadsheet should now be on the screen :

File: GYM TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	VICKI					
5	TIFFANY					
6	SHANNON					
7	CAROLYN-ANN					
8	KATHY					
9	TAYAH					
10	STEPHANIE					
11						
12						
13						
14						
15						
16						
17						
18						

A1: (Label) EVENT :

We will use a simple spreadsheet example to examine some of the basic spreadsheet features. Many of the commands and procedures that are introduced in this section will also apply when working with the AppleWorks word processor and data base. As you work through this section, periodically SAVE YOUR WORK.

The names of the girls on a gymnastics team have already been entered in column A. Rows 1 and 2 contain the four event and total point headings.

These entries begin with a letter and are treated as LABELS -- they appear left-justified in the cell. For each cell containing one of these entries, the cell indicator at the bottom of the screen will show "LABEL:".

6. Move the spreadsheet cursor across row 1.

   Note column widths have been changed for columns A and F. The other columns are displayed at the default setting.

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PART 2 : ENTERING VALUES AND LABELS

1. Move the spreadsheet cursor to cell B4. Starting there, enter all the following team scores for the week. Press the RETURN or an ARROW key to confirm. Headings and scores will NOT line up as they are entered. We will fix this later.

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	VICKI	6.5	7	8.5	8.5	
5	TIFFANY	5	7.5	7.5	9	
6	SHANNON	8.5	6	7	8	
7	CAROLYN-ANN	9	7.5	8	9	
8	KATHY	5.5	8.5	6.5	8	
9	TAYAH	8	8	6.5	9	
10	STEPHANIE	7.5	7.5	7.5	8.5	
11						
12						
13						
14						
15						
16						
17						
18						

2. Move the cursor to cell A3. Hold down the SHIFT key and tap the quote (") key one time.
   Note the word **LABEL:** appearing under the CELL INDICATOR.

3. Type the minus (-) sign across the screen, through column F.

4. Move the cursor to cell A11. Repeat steps 2 and 3, this time typing the equal (=) sign through column F.

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Erase entry

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3	---	---	---	---	---	---
4	VICKI	6.5	7	8.5	8.5	
5	TIFFANY	5	7.5	7.5	9	
6	SHANNON	8.5	6	7	8	
7	CAROLYN-ANN	9	7.5	8	9	
8	KATHY	5.5	8.5	6.5	8	
9	TAYAH	8	8	6.5	9	
10	STEPHANIE	7.5	7.5	7.5	8.5	
11	===	===	===	===	===	===
12						
13						
14						
15						
16						
17						
18						

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PART 3 : ENTERING AND COPYING FORMULAS

The total points for each team member will be recorded in column F. We will first enter one formula, make sure it is correct, and then COPY a RELATIVE version of this formula down column F.

1. Move the cursor to cell F4.

2. Type this formula: +B4+C4+D4+E4

3. Press RETURN. Check the addition.

> **BEGINNERS TAKE NOTE:** routinely do hand calculations to make sure you are getting correct calculation results! Those numbers can look so nice and neat, but with logic, typing or copying errors -- they can be soooooo wrong.

4. Make sure the cursor is still in cell F4.

5. Press open-apple C.
   (note the word **COPY** at the top of the screen)

6. Select : within worksheet press RETURN

7. Note the instructions at the bottom of the screen.

8. For this copy, the SOURCE is the formula in cell F4.

9. We are there . . . so press RETURN

10. Again, note the instructions at the bottom of the screen.

11. For this copy, the NEW LOCATION will begin in cell F5.

12. Move the cursor to cell F5.

13. Type a period (DO NOT include quotes!!) to indicate the beginning of the range.

14. DO NOT press RETURN.

15. Now use the down arrow key to highlight column F from cell F5 through cell F10. press RETURN

16. We are not quite done . . . a series of questions will next appear at the bottom of the screen.

17. When asked to select in reference to B4: select Relative.

18. Press RETURN.

19. When asked to select in reference to C4: select Relative.

20. Press RETURN.

21. For D4 and E4: select Relative. Press RETURN.

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20. WHEN YOU PRESS THE NEXT RETURN, COLUMN F SHOULD CONTAIN THE CALCULATION RESULTS FOR THE FORMULAS JUST COPIED.

File: GYM TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	VICKI	6.5	7	8.5	8.5	30.5
5	TIFFANY	5	7.5	7.5	9	29
6	SHANNON	8.5	6	7	8	29.5
7	CAROLYN-ANN	9	7.5	8	9	33.5
8	KATHY	5.5	8.5	6.5	8	28.5
9	TAYAH	8	8	6.5	9	31.5
10	STEPHANIE	7.5	7.5	7.5	8.5	31
11						
12						
13						
14						
15						

21. Place the cursor on cell F5, Tiffany's total points.

22. The formula at the bottom of the screen should read: Value: +B5+C5+D5+E5

23. If your formula contains any variation, the copy from cell F4 was not done correctly, e.g., a "No change" was probably entered.

24. If Tiffany's score contains any values other than her own, repeat the copy instructions on the previous page.

PART 4 : CHANGING THE VALUE LAYOUT SO THE DECIMALS LINE UP

When entering values, no "trailing zeros" will be accepted. If we had entered Tiffany's vault score as 5.0, it would still appear on the screen as 5.

Values can be displayed different ways: with decimal points, commas, dollar or percent signs. These layout options are available with the open-apple L command.

How values are displayed can be adjusted throughout the spreadsheet, by ROWS, COLUMNS or BLOCKS.

1. Place the cursor on cell B4 (6.5) and press oper-apple L. Note the word LAYOUT at the top of the screen.

2. Select : block press RETURN

3. Use the right arrow key to highlight B4 through F4.

4. Use the down arrow key to highlight through B10 to F10.

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5. Press RETURN.

6. Select : value format — press RETURN

7. Select : fixed — press RETURN

8. For number of decimal places, type : 1 — press RETURN

9. Your spreadsheet should now look like this:

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	VICKI	6.5	7.0	8.5	8.5	30.5
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	CAROLYN-ANN	9.0	7.5	8.0	9.0	33.5
8	KATHY	5.5	8.5	6.5	8.0	28.5
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	STEPHANIE	7.5	7.5	7.5	8.5	31.0
11						
12						
13						
14						
15						

10. If you are interested in experimenting with this layout feature, repeat part 4, selecting PERCENT or DOLLAR for different rows or columns. THEN RESET YOUR SPREADSHEET TO THE ABOVE EXAMPLE.

PART 5 : CHANGING THE LABEL FORMAT TO CENTER THE COLUMN HEADINGS

When you typed the team scores, the VALUES appeared on the right side of the column. They appeared RIGHT JUSTIFIED by default. The default setting for LABELS is LEFT JUSTIFICATION. We have just changed the format setting for values. Now we will change the setting for labels.

1. Move the cursor to cell A1 (EVENT :).

2. Press open-apple L.

3. Select : block — press RETURN

4. Use the arrow keys to highlight all the column headings above the dotted line (EVENT, TOTAL POINTS etc.). — press RETURN

5. Select : label format — press RETURN

6. Select : center — press RETURN

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7. Your headings should now appear centered in each column:

File: GYM TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	VICKI	6.5	7.0	8.5	8.5	30.5
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	CAROLYN-ANN	9.0	7.5	8.0	9.0	33.5
8	KATHY	5.5	8.5	6.5	8.0	28.5
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	STEPHANIE	7.5	7.5	7.5	8.5	31.0
11						
12						
13						
14						
15						

8. If the heading in column F, TOTAL POINTS, looks "unbalanced" in relation to the values in that column, try this:

9. Move the cursor to cell F1.

10. Press open-apple L.

11. Select : columns press RETURN

12. Select : label format press RETURN

13. Select : right justify press RETURN

TIP: You have been "selecting" by using an arrow key to highlight an option and then pressing RETURN. You can also "select" options by typing the first letter of the option you want, e.g., Row. The program will then move to the next set of options or questions.

PART 6 : ARRANGING (SORTING) SPREADSHEET INFORMATION

AppleWorks lets you rearrange rows in a spreadsheet. With this feature you can examine the same information in different ways.

For example, once information has been entered, it can be arranged alphabetically (e.g., by last names) or sorted numerically (e.g., showing highest to lowest scores). We will also see this VERY useful feature when we work with the AppleWorks data base.

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TO ARRANGE TEAM MEMBERS IN ALPHABETICAL ORDER:

1. Move the cursor to cell A4 (VICKI).
   We will rearrange the spreadsheet based upon information in this column.

   Note: In order to leave certain rows unaffected by a sort, you MUST indicate the beginning and end of the area you want to arrange.

2. Press open-apple A (to ARRANGE).
   Row 4 will now be highlighted.

3. Use the cursor to further highlight rows 5 through 10.

4. Press RETURN
   Note: Information in unhighlighted rows will not be rearranged.

5. The screen will next display:

"Rows 4 through 10 will be arranged based on contents of column A"

6. Select : Labels from A to Z press RETURN

7. Your spreadsheet should now be arranged like this:

File: GYM TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	CAROLYN-ANN	9.0	7.5	8.0	9.0	33.5
5	KATHY	5.5	8.5	6.5	8.0	28.5
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	STEPHANIE	7.5	7.5	7.5	8.5	31.0
8	TAYAH	8.0	8.0	6.5	9.0	31.5
9	TIFFANY	5.0	7.5	7.5	9.0	29.0
10	VICKI	6.5	7.0	8.5	8.5	30.5
11						
12						
13						
14						
15						
16						
17						
18						

A4: (Label) CAROLYN-ANN

TO ARRANGE THE TEAM ACCORDING TO TOTAL POINTS :

1. Move the cursor to cell F4 (33.5).

2. Press open-apple A.

3. Highlight rows 4 through 10 press RETURN

4. Select : values from 0 to 9 press RETURN

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5. The team roster has now been arranged by total points earned, lowest to highest :

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	KATHY	5.5	8.5	6.5	8.0	28.5
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	VICKI	6.5	7.0	8.5	8.5	30.5
8	STEPHANIE	7.5	7.5	7.5	8.5	31.0
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	CAROLYN-ANN	9.0	7.5	8.0	9.0	33.5
11						
12						
13						
14						
15						

PART 7 : CHANGING INFORMATION IN A SPREADSHEET

Making changes in a spreadsheet is very simple. Just position the cursor on a cell and type new information. If that cell has been "named" in any formulas -- anywhere in the spreadsheet -- the formula will be recalculated. Try these:

1. Move the cursor to cell B4.
2. Change Kathy's vault score to 5.0 by typing a 5
3. As you press RETURN, watch cell F4. The change to 28.0 will be FAST!
4. Move the cursor to cell B7.
5. Change Vicki's vault score to 7.5
6. As you press RETURN, again watch column F.
7. Change Carolyn-Ann's floor exercise score to 9.
8. The spreadsheet should contain the following scores in column F:

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	KATHY	5.0	8.5	6.5	8.0	28.0
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	VICKI	7.5	7.0	8.5	8.5	31.5
8	STEPHANIE	7.5	7.5	7.5	8.5	31.0
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
11						
12						
13						
14						
15						

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PART 8 : HOW TO PREVENT INFORMATION FROM BEING CHANGED

The information on a spreadsheet can be changed easily. You can PROTECT cells so entries can not be inadvertently changed by you or someone else.

We will use the open-apple L command to protect the scores on this gymnastic spreadsheet.

1. Move the cursor to cell B4.
2. Press open-apple L.
3. Select : block — press RETURN
4. Move the cursor to highlight all scores. — press RETURN
5. Select : protection — press RETURN
6. Select : nothing — press RETURN
7. Now try typing over any of the scores.
8. Try the open-apple B command.
9. When asked to override cell protection, select : NO
10. Place the cursor on cell B1. Note the bottom of the screen.

> The cell indicator shows:
>
> B1 (Label, Layout-C) Vault
>
> The cell indicator shows that cell B1 contains the word VAULT: a LABEL entry that has been set for a CENTERED layout.

11. Place the cursor on cell B4.

> The cell indicator shows:
>
> B4 (Value, Layout-F1 , Protected-N) 5
>
> For this cell, the entry is a VALUE that has been given a FIXED layout of ONE DECIMAL PLACE and has been set with PROTECTION which will allow for NOTHING.

To turn this feature "off":

12. Place the cursor again on cell B4.
13. Press open-apple L.
14. Select : block — press RETURN
15. Move the cursor to highlight all scores — press RETURN
16. Select : protection — press RETURN
17. For protection, select : Anything — press RETURN

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PART 9 : HOW TO GET A QUICK PRINTOUT OF SCREEN INFORMATION

AppleWorks provides a quick way to print what you see on the screen (a "screen dump"), with the open-apple H (for HARDCOPY) command. The gym team spreadsheet examples in this booklet were created using this feature.

With open-apple H, EVERYTHING on the screen is printed, including status line information. For more finished reports you would use the open-apple P (for PRINT) command.

If your computer is connected to a printer, try the following. If not, take time to see what a neighbor is printing.

1. Have the section of the spreadsheet you want printed on the screen.

2. The cursor can be on any cell.

3. Turn on the printer, and set the "select" button.

4. Press open-apple H.
   The printout should contain all information displayed on the screen.

5. Move the cursor to cell A20.

6. Print using the open-apple H command.
   This time rows 1 and 2 were not printed, because they are not on the screen.

File: GYM TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
3						
4	KATHY	5.0	8.5	6.5	8.0	28.0
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	VICKI	7.5	7.0	8.5	8.5	31.5
8	STEPHANIE	7.5	7.5	7.5	8.5	31.0
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
11						
12						
13						
14						
15						

7. Move the cursor back to cell A1.

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PART 10 : USING A SPREADSHEET FUNCTION

A coach might be interested in knowing the AVERAGE vault score for a meet. The formula for such a calculation would be:

+B4+B5+B6+B7+B8+B9+B10/7

Not much of a time-saver this way (and plenty of opportunity for typos). With a spreadsheet we can write formulas that contain CODE words. These codes represent common or complex calculations. We use these "shorthand" codes to write formulas in simple terms. The AppleWorks program applies the appropriate operations.

* Functions are written as abbreviations :

  @SUM is the code that stands for "add up the values in the following list of cells"

  @SUM(F3.F24)

  @AVG is the code for "add up the values in the following list of cells and calculate the average"

  @AVG(D3.D10)

  @MAX is the code that stands for "find the largest value from the following list"

  @MAX(A3,B3,C1,D6)

  @MIN is the code used to find the smallest value

  @MIN(A3,B3,C1,D6)

In cell B13, you will type the formula that says "add all the vault scores and calculate the average."

1. Enter : @AVG(B3.B11)

NOTE : FUNCTIONS must start with an "at" sign, (@) to indicate that what follows is a value, NOT a label

NOTE : the period (.) indicates you want a RANGE of cells.

NOTE : a formula that uses a FUNCTION must end with a right parenthesis symbol ( )).

2. When you press RETURN, the average is calculated.

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3. That's a LOT of decimal places. To change the layout:

   1. Press open-apple L.

   2. Select : entry — press RETURN
   3. Select : value format — press RETURN
   4. Select : fixed — press RETURN
   5. Select : 1 decimal place — press RETURN

4. In cell B14 : type this formula: @MAX(B3.B11) — press RETURN
   You now have the HIGHEST vault score.

5. In cell B15 : type this formula: @MIN(B3.B11) — press RETURN
   You now have the LOWEST vault score.

6. In cell A13 : type AVERAGE
   In cell A14 : type HIGH
   In cell A15 : type LOW

We now have the average, high and low VAULT scores for the meet. Next we will use the copy feature to duplicate the AVG, MAX and MIN formulas for the other columns in this spreadsheet.

1. Move the cursor to cell B13.

2. Press open-apple C.

3. Select : within worksheet — press RETURN

4. Use the down arrow key to highlight cell B14 (9) and cell B15 (5). — press RETURN

5. Use the right arrow key to highlight cell C13.

6. Type a period.

7. Use the right arrow key to highlight columns D, E and F. — press RETURN

8. For all the questions that next appear at the bottom of the screen, select: relative

9. Your spreadsheet should now look like this:

File: GYM TEAM SCORES — REVIEW/ADD/CHANGE — Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	KATHY	5.0	8.5	6.5	8.0	28.0
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	VICKI	7.5	7.0	8.5	8.5	31.5
8	STEPHANIE	7.5	7.5	7.5	8.5	31.0
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
11						
12						
13	AVERAGE	7.2	7.4	7.5	8.6	30.7
14	HIGH	9	8.5	9	9	34.5
15	LOW	5	6	6.5	8	28

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DID YOU NOTICE?

When you made a copy of cell B13, the fixed, one decimal layout was also copied into cells C13, D13, E13 and F13.

How would you fix this BLOCK of numbers, so that the decimal points lined up? . . . Go ahead.

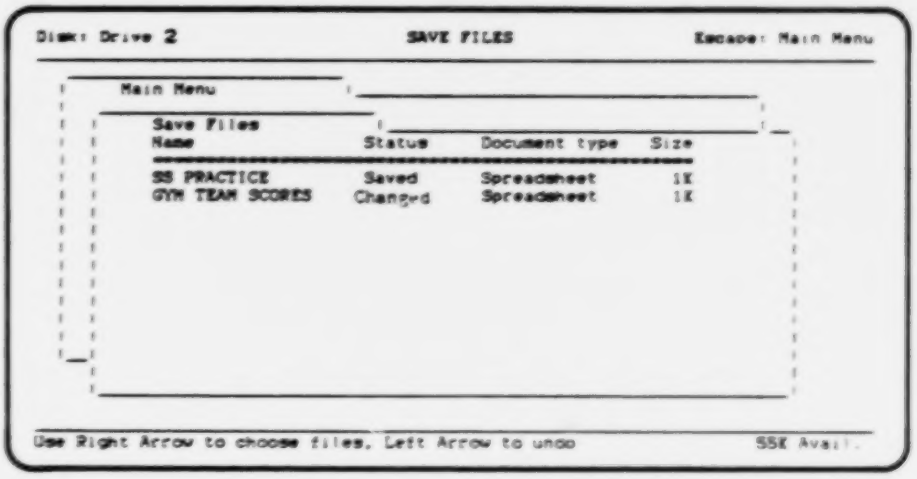
PART 11 : SAVING SEVERAL SPREADSHEET FILES

You have been periodically saving your updated spreadsheet file with the open-apple S command . . . right ? AppleWorks also allows you to save your work from the Main Menu. The save routine from this menu allows you to save several files at once. Since you can have more than one file on the Desktop (in memory), saving from the Main Menu lets you select the files you want to save.

1. Press the ESC key to return to the Main Menu.

2. Select : 3. Save Desktop files to disk.

3. Your screen should now show the Save File Menu :



4. Note the top of the screen indicates: SAVE FILES.

With this save routine, additional information for each file is provided:

* FILE NAME

* STATUS

* DOCUMENT TYPE

* FILE SIZE

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5. Note the instructions at the bottom of the screen.

6. "Mark" the SS PRACTICE filename by typing the RIGHT ARROW key.

7. Press the DOWN ARROW key to move to the next filename.

8. "Mark" GYM TEAM SCORES. press RETURN

9. Select : 1. Save the file on the current disk

10. Select : 1. Let the new information replace the old

> What is currently saved ON THE DISK under the filename GYM TEAM SCORES is about to be replaced with whatever is IN MEMORY under that same filename.
>
> If you DO NOT press the ESC key, the save routine will be completed. If you do press ESC, the save routine will be cancelled.

11. Repeat the save routine for the SS PRACTICE file. This time tap the ESC key to stop the process.

12. Press the SPACEBAR to return to the Save File Menu.

13. Press open-Apple Q, to "quickly" select a file to work with.

14. Select : GYM TEAM SCORES

PART 12 : PRINTING A SPREADSHEET REPORT

> When printing a spreadsheet report:
>
> * Use the open-apple P command.
> * If the report fits on an 8 inch (wide) sheet of paper, print it.
> * If it won't all fit, use the open-apple O command (for Print Options) to reduce the characters per inch setting, e.g., print with elite type (12) rather than pica (10).
> * If the spreadsheet still will not fit, you will have to print it out in BLOCKS.

Even if you are not connected to a printer, go through the following print routine. AppleWorks will return you to your spreadsheet.

1. Move the cursor to cell A1.
2. Press open-apple P.

3. For Print? select : all (might as well try this first)

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4. Note the message on the screen:

> The information that you identified
> is 67 characters wide.
>
> The Printer Options values allow
> 80 characters per line.

Great. Our spreadsheet example will fit without having to make any further Printer Option adjustments.

5. For "where do you want to print the report? select: the name of your printer.

6. Type today's date.

7. If you are connected to a printer, turn on both the ON/OFF and SELECT lights.

8. For how many copies? type :1

9. When you press RETURN the spreadsheet report will be printed. Note that the report contains "HEADING" information such as filename, page number and date:

File: GYM TEAM SCORES Page 1
4/28/84

EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
KATHY	5.0	8.5	6.5	8.0	28.0
TIFFANY	5.0	7.5	7.5	9.0	29.0
SHANNON	8.5	6.0	7.0	8.0	29.5
VICKI	7.5	7.0	8.5	8.5	31.5
STEPHANIE	7.5	7.5	7.5	8.5	31.0
TAYAH	8.0	8.0	6.5	9.0	31.5
CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
AVERAGE	7.2	7.4	7.5	8.6	30.7
HIGH	9	8.5	9	9	34.5
LOW	5	6	6.5	8	28

PART 13 : COPYING A SPREADSHEET

Thus far we have used the open-apple C (COPY) command to make a relative copy of a formula down one column. The copy feature is very powerful and can be applied, in several variations, to reduce repetitive typing and formula entry.

In part 13-A you will make a duplicate of the completed gymnastics spreadsheet. This first copy will be "within the same document" (the same file).

In part 13-B, the second copy will be into ANOTHER spreadsheet via the clipboard. I like to introduce the AppleWorks clipboard as soon as possible. Passing information BETWEEN files can be an impressive, time-saving technique.

PART 13-A : MAKING A COPY "WITHIN A WORKSHEET"

1. Place the cursor on cell A1.
2. Press open-apple C (to COPY).
3. Select : Within worksheet
4. Read the bottom of the screen.
5. Use the down arrow key to highlight column A, rows 1 through 15.
6. Press RETURN.
7. Read the bottom of the screen.
8. Use the down arrow key to move the cursor to cell A20.
9. Press RETURN. The copy has been completed.
10. Move the cursor down to cell A20 to view a second set of names.
11. To make a copy of the next column, move the cursor to cell B1.
12. Press open-apple C.
13. Select : Within worksheet
14. Use the down arrow key to highlight column B, rows 1 through 15.
15. Press RETURN.
16. Move the cursor to cell B20. press RETURN
17. For every question at the bottom of the screen, select: relative

> To make a complete copy of this spreadsheet, this process would be repeated for columns C, D, E and F. Unfortunately AppleWorks does not provide a procedure to copy a BLOCK of cells within a spreadsheet.

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PART 13-B : MAKING A COPY "TO THE CLIPBOARD"

If we use the clipboard, we can copy a BLOCK of spreadsheet cells. To do this we will first create a new (empty) spreadsheet, place a copy of the GYM TEAM spreadsheet on the clipboard, then move this copy into the new spreadsheet.

1. ESC to the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 5. Make a new file for Spreadsheet — press RETURN
4. Select : 1. From Scratch — press RETURN
5. For filename, type: TEMPLATE.SCORE — press RETURN
6. You should now have an "empty" spreadsheet on the screen.

To copy to the clipboard:

7. ESC to the Main Menu.
8. Select : 2. Work with files on the Desktop — press RETURN
9. Select : GYM TEAM SCORES — press RETURN
10. Move the cursor to cell A1.
11. Press open-apple C (to Copy).
12. Select : To clipboard — press RETURN
13. Now use the down arrow key to highlight rows 1 through 15.
14. Press RETURN.
    A COPY of your spreadsheet will be on the clipboard.
    (No, there wasn't any message to confirm this . . .)
15. ESC to the Main Menu.
16. Select : 2. Work with files on the Desktop — press RETURN
17. Select : TEMPLATE.SCORES — press RETURN
18. Press open-apple M (to Move).
19. Select : From clipboard — press RETURN
    A copy of your spreadsheet will now be in this file and in your GYM TEAM SCORES file.

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PART 14 : SETTING ALL SCORES TO ZERO

This file can be used as a "template" for future gymnastic meets by resetting all the event scores to zero. As the scores are changed to 0.0 note that the TOTAL POINT, AVERAGE, HIGH and LOW values are recalculated.

1. Move the cursor to cell B4.
2. Type : 0.0 press RETURN
3. Press open-apple C.
4. Select: within worksheet press RETURN
5. The source will be cell B4. press RETURN

The new location will begin in cell B5.

6. Move to B5.
7. Type a period.
8. Use the right arrow key to highlight Columns C, D and E.
9. Use the down arrow key to highlight Rows 6 through 10.
10. Press RETURN.
11. Use the copy procedure to change the values in cells C4, D4 and E4 to 0.0.
12. Enter some "new scores." Note cells that are recalculated.
13. Your "template" spreadsheet should look like this:

File: TEMPLATE.SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS		
2								
3								
4	KATHY	0.0	0.0	0.0	0.0	0.0		
5	TIFFANY	0.0	0.0	0.0	0.0	0.0		
6	SHANNON	0.0	0.0	0.0	0.0	0.0		
7	VICKI	0.0	0.0	0.0	0.0	0.0		
8	STEPHANIE	0.0	0.0	0.0	0.0	0.0		
9	TAYAH	0.0	0.0	0.0	0.0	0.0		
10	CAROLYN-A	0.0	0.0	0.0	0.0	0.0		
11								
12								
13	AVERAGE	0.0	0.0	0.0	0.0	0.0		
14	HIGH	0	0	0	0	0		
15	LOW	0	0	0	0	0		

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activity 3 USING A SPREADSHEET FOR GRADES

In this activity you will work with a spreadsheet file that has been set up to record and calculate student grades.

1. Begin at the Main Menu.

2. Select : 1. Add files to the Desktop press RETURN

3. Select : 1. Get files from the current disk press RETURN

4. Select : -> GRADEBOOK press RETURN

NOTE: Cells C4, E4 and G4 contain the TOTAL POINTS POSSIBLE for each test. Since Jack did not take the third test, cell G9 is blank.

File: GRADEBOOK REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	GRADEBOOK		TEST 1		TEST 2		TEST 3	
2	1st period							
3			SCORE		SCORE		SCORE	
4			15	%	25	%	39	%
5								
6	Smith	Mary	14		22.5		33	
7	Whittikaer	Jane	10		20		28	
8	Knott	John	9		12		25	
9	Larmour	Jack	6		15			
10	Beardsley	Bret	12		19		33	
11	Somerville	George	15		23		36	
12								
13		CLASS						
14		AVERAGE						

PART 1 : CALCULATING PERCENTAGE SCORES

Once raw scores have been entered, we can calculate a student's PERCENTAGE SCORE by dividing points earned by the points possible.

For TEST 1 there were 15 points possible: Mary's score was 14.

To calculate the percentage score we would write:

14/15

Using the cells that contain those numbers we would enter:

+C6/C4

1. Enter the above formula in cell D6. press RETURN
   .9333333 should be displayed.

2. Enter the formula +E6/E4 in cell F6.
   This formula will calculate Mary's percentage score for TEST 2.

3. Enter +G6/G4 for TEST 3, in cell H6.

PART 2 : CALCULATING THE CLASS AVERAGE

Next we will use a spreadsheet FUNCTION to calculate the class AVERAGE for each test.

Using the AVG function, we will enter the formula that calculates the average student scores for cells D6 through D11.

1. In cell D14 enter @AVG(D6.D11). press RETURN
   .9333333 should be displayed. Why this number?

> Note: When entering a range of cells, type one period. The program will insert three decimal points within the parenthesis: @AVG(D6...D11).

2. In cell F14 enter @AVG(F6.F11)
   This will calculate the class average for TEST 2.

3. For TEST 3 enter @AVG(H6.H11) in cell H14.

4. Use the open-apple L command so values in columns D, F and H are displayed in the PERCENT format with one decimal place.

   NOTE: The open-apple L process will have to be done three times, one column at a time.

   NOTE: Columns E and G are NOT to be displayed as PERCENTS.

5. Your rows 6 and 14 should agree with the following example:

File: GRADEBOOK.1 REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	GRADEBOOK		TEST 1		TEST 2		TEST 3	
2	1st period							
3			SCORE		SCORE		SCORE	
4			15	%	25	%	39	%
5								
6	Smith	Mary	14	93.3%	22.5	90.0%	33	84.6%
7	Whittlkaer	Jane	10		20		28	
8	Knott	John	9		12		25	
9	Larmour	Jack	6		15			
10	Beardsley	Bret	12		19		33	
11	Somerville	George	15		23		36	
12								
13		CLASS						
14		AVERAGE		93.3%		90.0%		84.6%
15								
16								
17								

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PART 3 : CALCULATING AN AVERAGE FOR THE OTHER STUDENTS

Mary's scores have been calculated. Now for the other students.

1. Copy the formula in cell D6 INTO cells D7 THROUGH D11.

2. When asked to select in reference to C6 : select Relative.

3. When asked to select in reference to C4 : select No Change.

> Each student score is to be divided by 15. Since we want an exact copy of the value in this cell, No Change is selected.

4. Copy the formula in cell F6 INTO cells F7 THROUGH F11. The value in cell E4 (25) will also be a No Change copy.

5. Repeat this process one more time, in column H.

Once you have entered and "tested" a formula, the copy feature allows for quick duplication of both RELATIVE and NO CHANGE formulas.

6. Your spreadsheet should look like this:

File: GRADEBOOK.2 REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	GRADEBOOK		TEST 1		TEST 2		TEST 3	
2	1st period							
3			SCORE		SCORE		SCORE	
4			15	%	25	%	39	%
5								
6	Smith	Mary	14	93.3%	22.5	90.0%	33	84.6%
7	Whittikaer	Jane	10	66.7%	20	80.0%	28	71.8%
8	Knott	John	9	60.0%	12	48.0%	25	64.1%
9	Larmour	Jack	6	40.0%	15	60.0%		0.0%
10	Beardsley	Bret	12	80.0%	19	76.0%	33	84.6%
11	Somerville	George	15	100.0%	23	92.0%	36	92.3%
12								
13		CLASS						
14		AVERAGE		73.3%		74.3%		66.2%
15								
16								
17								

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PART 4 : ADDING STUDENTS TO THE SPREADSHEET

Next we will add two more students to this gradebook. AppleWorks provides an **INSERT** feature with the open-apple I command. More information can be added at the beginning, end, or in the middle of existing entries.

1. Move the cursor to cell A8.
2. Press open-apple I (to INSERT).
3. Select : **ROWS** press RETURN
4. For number of rows to insert, type : 2 press RETURN

A "wedge" of rows has now been inserted for two more student entries. Information for John, Jack, Bret and George has been "relocated" two rows down. CLASS AVERAGE information is now on rows 15 and 16.

We can insert rows any place in the spreadsheet, except row 999.

We can also insert columns using open-apple I.

We can **DELETE** rows and columns with open-apple D. This is how you would permanetly remove an entry (e.g., a student who has left).

5. Add the new information listed below on rows 8 and 9.

File: GRADEBOOK.3 REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	GRADEBOOK		TEST 1		TEST 2		TEST 3	
2	1st period							
3			SCORE		SCORE		SCORE	
4			15	%	25	%	39	%
5								
6	Smith	Mary	14	93.3%	22.5	90.0%	33	84.6%
7	Whittikaer	Jane	10	66.7%	20	80.0%	28	71.8%
8	Small	Laura	12		17		34	
9	Riley	Bill	11		17		31	
10	Knott	John	9	60.0%	12	48.0%	25	64.1%
11	Larmour	Jack	6	40.0%	15	60.0%		0.0%
12	Beardsley	Bret	12	80.0%	19	76.0%	33	84.6%
13	Somerville	George	15	100.0%	23	92.0%	36	92.3%
14								
15		CLASS						
16		AVERAGE		73.3%		74.3%		66.2%
17								

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PART 5 : UPDATING THE GRADEBOOK

We have added two students and their test results. Next we need to calculate their percentage scores.

But what about the students who were relocated on different rows? What has happened to their formulas once two rows were inserted? And, what about the CLASS AVERAGE: the function was written to calculate only rows 6 through 11?

1. Move the cursor to cell D10.

2. Note what is indicated in the area below the CELL INDICATOR, at the bottom of the screen :

   D10: (Value, Layout-P1) +C10/C4

3. Move the cursor down through cell D13.
   Note how the formulas are displayed at the bottom of the screen.

> When rows are inserted in a spreadsheet, AppleWorks automatically renumbers all rows below the insertion.
>
> AppleWorks also reworks the formulas. The formulas are adjusted and continue to refer to the cells originally intended.
>
> And FUNCTIONS that refer to the affected rows or columns WILL ALSO BE ADJUSTED. Calculations will include entries in the new cells.

4. Move the cursor to cell D16.

5. Note what is indicated in the area below the CELL INDICATOR:

   D16 (Value, Layout-P1) @AVG (D6 ... D13)

It appears that our existing formulas are still accurate. Copy a PERCENTAGE SCORE formula for the two new students:

6. Move the cursor to cell D7.

7. Press open-apple C (to COPY).

8. Select : within worksheet press RETURN

9. With the cursor on cell D7 press RETURN -- that will be the SOURCE.

10. Move the cursor to cell D8 -- that will be our NEW LOCATION.

11. Press the period to begin the copy routine in this cell.

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12. Use the down arrow key to highlight cell D9.

13. Select **RELATIVE** for the first reference.

14. Select **NO CHANGE** for the second reference.

15. Repeat the copy routine in columns F and H.

16. Your spreadsheet should now look like the one below.

17. Press open-apple S to SAVE your work.

File: GRADEBOOK.4 REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H
1	GRADEBOOK		TEST 1		TEST 2		TEST 3	
2	1st period							
3			SCORE		SCORE		SCORE	
4			15	%	25	%	39	%
5								
6	Smith	Mary	14	93.3%	22.5	90.0%	33	84.6%
7	Whittlkaer	Jane	10	66.7%	20	80.0%	28	71.8%
8	Small	Laura	12	80.0%	17	68.0%	34	87.2%
9	Riley	Bill	11	73.3%	17	68.0%	31	79.5%
10	Knott	John	9	60.0%	12	48.0%	25	64.1%
11	Larmour	Jack	6	40.0%	15	60.0%		0.0%
12	Beardsley	Bret	12	80.0%	19	76.0%	33	84.6%
13	Somerville	George	15	100.0%	23	92.0%	36	92.3%
14								
15		CLASS						
16		AVERAGE		74.2%		72.8%		70.5%
17								

PART 6 : ADJUSTING FOR NO MARK ENTRIES (e.g., absences or incompletes)

Jack was absent and did not take the third test. His 0% is lowering the overall class average. It would be better if the zero in cell G11 was left out of the class AVERAGE calculation.

1. Move the cursor to cell H11.

2. Press open-apple B.

3. Select : entry press RETURN

4. The class average for TEST 3 should now show 80.6%.

With the @AVG FUNCTION, the values in each cell are added together and then divided by the number of cells that CONTAIN entries. Cell H11 was counted in -- it contained a zero from the calculation G11/G4. By blanking out cell H11, the zero was no longer included in the AVG calculation.

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PART 7 : CALCULATING THE TOTAL POINTS EARNED

After the first few scores have been recorded we can use the spreadsheet to calculate the TOTAL POINTS EARNED and the AVERAGE SCORE TO DATE for each student. Using a spreadsheet gradebook, a teacher can quickly print up-to-date grade information anytime during the term.

First we will place headings in columns I and J.

1. In cell I1 type TOTAL.
   In cell I2 type POINTS.
   In cell J1 type TEST.
   In cell J2 type AVERAGE.
   In cell J3 type TO DATE.

2. Move the cursor to cell I4.
   Note Column A is no longer displayed on the screen.

3. In cell I4 enter @SUM(C4,E4,G4).
   This formula will add together the values entered in cells C4, E4 and G4, the points possible per test.

4. Copy this formula down column I, for row I6 through row I13 to obtain the TOTAL POINTS earned for each student.

How are you doing with the RELATIVE / NO CHANGE questions?

PART 8 : CALCULATING A STUDENT'S AVERAGE SCORE FOR SEVERAL ACTIVITIES

1. Move the cursor to cell J6.

2. Enter the formula +I6/I4.
   This divides a student's total points to date (column I information) by the total points possible (cell I4 information).

3. Use open-apple L to change column J to the PERCENT format. one decimal place.

4. Copy the formula in cell J6 down through J13.
   (HINT: RELATIVE for I6; NO CHANGE for I4)

PART 9 : USING THE SPREADSHEET TO CALCULATE "MAKE-UP" WORK

Once a spreadsheet gradebook has been set up with labels, values and the CORRECT formulas, adding make-up scores is easy.

John has taken TEST 1 again. His score is now 12.

1. Move the cursor to cell C10.
2. Type a 12.
3. Watch the screen when you press RETURN.

DID YOU NOTICE THE CLASS AVERAGES AND STUDENT SCORES ADJUSTING TO THIS LATEST ENTRY ?

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PART 10 : MORE MINOR ADJUSTMENTS FOR JACK

What are we going to do with Jack? With one score missing, he looks to be in big trouble with an overall average of 26.6%. With parent teacher conferences coming up, we will write a special formula just for our boy Jack.

1. Move the cursor to cell J11.

The total points possible for Jack's two tests is 40.

We need a formula that will divide the points he has earned to date (column I information) by his 40 total points.

2. Press open-apple U (to EDIT a spreadsheet cell).
   Note the bottom of the screen.

3. Use the right arrow key to move the cursor at the bottom of the screen to I4.

4. Press open-apple Y to delete the I4.

5. Type 40.
   The formula at the bottom of the screen should say:
   +I11/40.

6. Press RETURN.

Jack should now be up to 52.5%. Note the spreadsheet below.

Now calculate the overall class AVERAGE:

7. In cell J16 type @AVG(J6.J13).
   This formula calculates the average test score for cells J6 through J13.

8. Adjust this last entry for a PERCENT format.

9. Your spreadsheet should look like this :

File: GRADEBOOK.5 REVIEW/ADD/CHANGE Escape: Main Menu

	C	D	E	F	G	H	I	J
1	TEST 1		TEST 2		TEST 3		TOTAL	TEST
2							POINTS	AVERAGE
3	SCORE		SCORE		SCORE			TO DATE
4	15	%	25	%	39	%	79	
5								
6	14	93.3%	22.5	90.0%	33	84.6%	69.5	88.0%
7	10	66.7%	20	80.0%	28	71.8%	58	73.4%
8	12	80.0%	17	68.0%	34	87.2%	63	79.7%
9	11	73.3%	17	68.0%	31	79.5%	59	74.7%
10	12	80.0%	12	48.0%	25	64.1%	49	62.0%
11	6	40.0%	15	60.0%			21	52.5%
12	12	80.0%	19	76.0%	33	84.6%	64	81.0%
13	15	100.0%	23	92.0%	36	92.3%	74	93.7%
14								
15								
16		76.7%		72.8%		80.6%		75.6%
17								

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PART 11 : VIEWING A SPREADSHEET

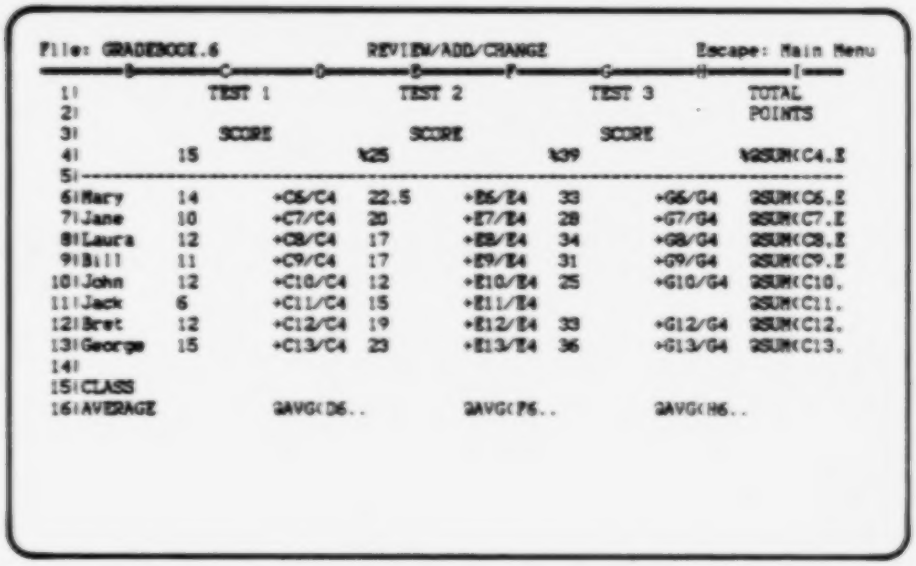
APPLEWORKS allows you to view a spreadsheet several ways. We will look at two commands that affect how the spreadsheet is displayed.

Sometimes it is helpful to view all the formulas at one time. The open-apple Z command will provide this display.

1. The cursor can be anywhere in the spreadsheet.

2. Press open-apple Z (for ZOOM).

With the ZOOM "on" cell formulas are displayed:



File: GRADEBOOK.6 REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F	G	H	I
1		TEST 1		TEST 2		TEST 3		TOTAL	
2								POINTS	
3		SCORE		SCORE		SCORE			
4		15		%25		%39		%@SUM(C4.E	
5									
6	Mary	14	+C6/C4	22.5	+E6/E4	33	+G6/G4	@SUM(C6.E	
7	Jane	10	+C7/C4	20	+E7/E4	28	+G7/G4	@SUM(C7.E	
8	Laura	12	+C8/C4	17	+E8/E4	34	+G8/G4	@SUM(C8.E	
9	Bill	11	+C9/C4	17	+E9/E4	31	+G9/G4	@SUM(C9.E	
10	John	12	+C10/C4	12	+E10/E4	25	+G10/G4	@SUM(C10.	
11	Jack	6	+C11/C4	15	+E11/E4			@SUM(C11.	
12	Bret	12	+C12/C4	19	+E12/E4	33	+G12/G4	@SUM(C12.	
13	George	15	+C13/C4	23	+E13/E4	36	+G13/G4	@SUM(C13.	
14									
15	CLASS								
16	AVERAGE		@AVG(D6..		@AVG(F6..		@AVG(H6..		

3. Place the cursor in a cell in column I.

> The column width determines how much of the formula can be viewed in the cell. You only see the part of the formula that fits. However, the complete formula is displayed below the cell indicator.
>
> To view a complete formula in a cell the open-apple L command would be used to increase the column width.
>
> You can PRINT a spreadsheet displaying all the formulas by pressing open-apple P or open-apple H while the zoom is "on."

4. Press open-apple Z. The numbers will again be displayed on the screen.

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As we begin to use more columns in a spreadsheet, the first columns (e.g., student NAMES) gets farther from the latest calculations (e.g., TEST SCORE AVERAGES). With AppleWorks we can "fix" a title area so it will not scroll off the screen.

1. Have columns A and B on the screen.

2. Move the cursor to column C.

3. Press open-apple T (for TITLES).

4. Select : left side press RETURN

Columns A and B have now been "set".

5. Move the cursor to the right.
   Note that columns A and B do not scroll off the screen.

   Note that as column I appears on the screen, column C scrolls "under" columns A and B.

We can now have the columns containing grade-related information scroll up next to the columns containing student names.

6. Experiment with this feature. Move the cursor all the way to the right AND left.

7. Press open-apple T to return to regular screen viewing.

8. Experiment with the TOP and BOTH options.

9. Remember to place the cursor to the right and/or under the titles you want to set.

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PART 12 : SPECIAL CONSIDERATIONS FOR ARRANGING SPREADSHEET INFORMATION

With open-apple A we can arrange the class list by test averages:

1. Move the cursor to cell J6.

2. Press open-apple A.

3. Highlight rows 6 through 13 press RETURN

4. Select : values from 9 to 0.

With an overall test average of 93.7%, George should now be at the top of the class list. With an 52.5% average, Jack is in last place:

File: GRADEBOOK.7 REVIEW/ADD/CHANGE Escape: Main Menu

1		TEST 2		TEST 3	TOTAL POINTS	TEST AVERAGE TO DATE	
2							
3		SCORE		SCORE			
4	%	25	%	39	%	79	
5							
6	George	100.0%	23	92.0%	36	92.3%	74	93.7%
7	Mary	93.3%	22.5	90.0%	33	84.6%	69.5	88.0%
8	Bret	80.0%	19	76.0%	33	84.6%	64	81.0%
9	Laura	80.0%	17	68.0%	34	87.2%	63	79.7%
10	Bill	73.3%	17	68.0%	31	79.5%	59	74.7%
11	Jane	66.7%	20	80.0%	28	71.8%	58	73.4%
12	John	80.0%	12	48.0%	25	64.1%	49	62.0%
13	Jack	40.0%	15	60.0%			21	52.5%
14								
15	CLASS							
16	AVERAGE	96.7%		91.0%		88.5%		90.8%
17								

WAIT!!! WHAT HAS HAPPENED TO ROW 16 ??

It appears that the open-apple A procedure has recalculated the CLASS AVERAGE for each test -- and is now displaying incorrect averages!

1. Move the cursor to cell J16.

According to the cell indicator at the bottom of the screen the function is averaging cells J7 through J6: @AVG(J7. . .J6).

This is giving us the average for Mary and George!!

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2. Move the cursor to cell H16.
   The same thing!! @AVG(H7. . .H6).

This is NOT the range entered in either PART 2 or PART 10. We entered a formula averaging row 6 through row 13. Mary and George just happened to be the first and last student entries in this range.

3. Try arranging this list alphabetically.

4. Arrange this list with scores, lowest to highest.

We continue to get only the range of cells between Mary and George, not the range for the entire class.

TO CORRECT THIS SITUATION :

When writing a function, identify the range of cells CONTAINING the values, plus an ADDITIONAL blank cell both above and below this range.

5. Move the cursor to cell D16.

6. Press open-apple U.
   We will edit the cell range in this function.

7. Change the function to read: @AVG(D5...D14).

8. Press RETURN.
   The class average for Test 1 should now indicate 76.7%.

Now try arranging this class list:

9. Move the cursor to cell D6.

10. Press open-apple A.

11. Highlight rows 6 through 13. press RETURN

12. Select: values from 0 to 9

Since Jack received the lowest score, he should now be at the top of the list. The CLASS AVERAGE for Test 1 should be 76.7%.

13. Move the cursor to cell A6.

14. Arrange this list alphabetically from A to Z.

Bret Beardsley should now be listed first. The class average for Test 1 should still be 76.7%.

15. You will have to "adjust" the remaining functions on row 16 by making a RELATIVE copy of the function in cell D16, or by using open-apple U and changing the range of cells.

16. Save your work.

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Open-Apple Keystrokes for Spreadsheet

Arrange	- A	Arrange or sort rows
Blank	- B	Blank out a cell (erase entry)
Copy	- C	Copy entries
Delete	- D	Delete a column or row
Edit (Cursor Switch)	- E	Switch from insert to overstrike cursor and back
Find	- F	Find entries by coordinates or content
Hard Copy	- H	Print current screen display
Insert	- I	Insert a column or row
Jump	- J	Jump to other window
Calculate	- K	Recalculate values
Layout	- L	Modify cell layout, e.g., center label, display value as percent
Move	- M	Move a column or row
Name	- N	Change the name of a file
Options (Printing)	- O	Display printing options menu
Print	- P	Print a worksheet
Quick Change	- Q	Work with a different file on the desktop
Save	- S	Save the file to disk
Cell Edit	- U	Edit cell contents
Value	- V	Change default vaules
Window	- W	Create windows
Clear	- Y	Clear (delete) to end of cell
Zoom	- Z	Zoom to display formulas
Ruler	- 1 . . - 9	Move to beginning (1), end (9), or elsewhere proportionally (2-8) in a file
Help	- ?	Display help screen
Cursor Move	- — or - —	Scroll one full screen horizontally
Cursor Move	- ↑ or - ↓	Scroll one full screen vertically

ARTICLES ON SPREADSHEET APPLICATIONS

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VisiCalc™ in the Elementary School

by
Jean W. Wilson

"Secondary school students have used VisiCalc successfully. But is it too complicated for elementary-grade children? We decided to find out."

Walk into any business office and you have a good chance of seeing someone using *VisiCalc*,™ a program with great power to provide capabilities normally exercised through use of a pencil, paper and calculator. Because *VisiCalc* gives results accurately, quickly and with great flexibility, it is widely used in business for budgeting and forecasting.

If students could be taught *VisiCalc*, it would permit the exploration of some mathematical relationships and use of formulas and would facilitate decision making and problem solving—the focus of mathematics education in the 1980s. *VisiCalc* would allow students to work with more involved problems, emphasizing the thought process rather than the computation. Students could explore many "what if" situations by changing an entry and quickly seeing the consequences. And students would experience using the computer as a tool in a new way.

Secondary school students have used *VisiCalc* successfully. But is it too complicated for elementary-grade children? We decided to find out.

A small group of fifth grade students was selected for an introduction to *VisiCalc* over a three-day period. These students had worked with Logo for about six weeks and were familiar with the Apple computer. They were children of average ability from a very low socio-economic neighborhood.

An Introductory Budget Activity

A simple budget spreadsheet was booted up for each student, and the activities were presented. A cue sheet of keys/commands was developed as a reminder for students as they progressed.

It is necessary to create a pattern, or template, to use *VisiCalc* to solve problems—in this case, a budget template. After such a template is completed for the students, they can begin work.

1. Have students boot the *VisiCalc* disk.
2. Remove the *VisiCalc* disk from the disk drive and insert a storage disk with the budget template on it.
3. Type /SL and then the name of the desired program, in this case, BUDGET. Press RETURN. When the program is loaded, the screen should look like this:

A1 (L) BUDGET

	A	B	C	D
1	BUDGET			
2				
3			WEEK 1 ...	WEEK 8
4	INCOME			
5	ALLOWANCE		5.00	
6	BABYSITTING			
7	SMALL JOBS		15.00	
8				
9	TOTAL INCOME		20.00	
10				
11				
12	EXPENSES			
13	SNACKS		2.00	
14	ENTERTAINMENT		5.00	
15	SAVINGS		10.00	
16	MISCELLANEOUS		6.00	
17				
18	TOTAL EXPENSES			
19				
20	PROFIT FOR WEEK			

Figure 1.

The top of the screen has the template title, BUDGET. The cursor is at coordinate A1, where the label "Budget" is at. If the cursor had been at C5, it would be at the value 5.00.

4. Give students practice in moving the cursor to specific coordinates: Move the cursor to A12 by moving the arrow keys or by typing >A12. What information is in that coordinate? Is this entry a label or a value?
5. Have students practice entering data: Enter 12 at C6. What does this do to the entry in C9?
6. Give students practice in changing the data in an entry and predicting what will happen to related coordinates such as C9: Move the cursor to C7 and type in 17. Notice that 17 replaces what was previously in the coordinate. Did this change C9 as predicted?
7. Let students practice writing formulas: Move the cursor to C9. Look at the top line of the screen. The formula +C5+C6+C7, the sum of the values in each coordinate, appears on the top line. The "+" must be typed in front of the letter C to tell *VisiCalc* that this is a value rather than a label. Have students write the formula for the total of the expenses in C18. Be sure the cursor is on C18 when the formula is being written. Now move the

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cursor to the coordinate that indicates profits for the week. Let students decide what the formula would be and type it in.

8. Have students move the cursor back to C9 and show how the formula for finding the total can be written using the SUM function by typing @sum (C5 . . . C7) and pressing RETURN. Then have students move the cursor to C18 and let them decide how to use the SUM function to get the desired answer.

If students are working on the concept of percent of increase or decrease, the problem could be expanded by increasing the week's income by 10 percent. An additional column, column D, would be set up to show this increase. Give students an opportunity to experiment and decide what formula to use to obtain the 10 percent increase. If students are concerned only with a 10 percent increase of their total income, a formula can be written in the D9 coordinate. One appropriate formula which students may write is +C9*1.10. Are there other formulas which would produce the same answer?

If a 10 percent increase for each source of income is being considered, the formula, +C5*1.10, can be written in D5 and then the replication command can be utilized to repeat the same formula for all income entries. To utilize the replication command in this example, type /R:D6 . . . D9 and press RETURN. Then type R. Have the students move the cursor to each entry (D5, D6, D7, D8, D9) to read each formula displayed at the top of the screen. Students can practice further by deciding how expenses could be decreased by 20 percent.

Students had no difficulty working with this budget and were eager to include their own entries. After working with the sample budget, they worked individually to make up a personal or a school budget. (The school budgets were extremely interesting!) They easily transferred the skills they had learned. Since their introduction to *VisiCalc* was very limited, there was very little time to develop other activities. However, students learned to use the SUM function, and averaging grades became a fun activity with the AVERAGE function. They became quite proficient with the replication command and were fascinated to learn its use to number the spreadsheet. In short, they found *VisiCalc* enjoyable and challenging.

Integrating *VisiCalc* into the Curriculum

VisiCalc can be a valuable tool in science, mathematics and social studies by developing and reinforcing skills in problem solving, generalizing, predicting, decision making and hypothesizing. Students can gain practice in setting up mathematical formulas, which can be used to find totals, subtotals, differences, percents, etc.; they can predict what would happen if an entry were changed. Deciding which entry to change and how to change it provides practice with decision making.

Science

Here is a problem-solving application in science that gives students experience in making a template and writing formulas. If a faucet drips 10 drops per minute and there are 20 drops per milliliter, what is the capacity of water wasted in one hour? one day? one week? one month?

The labels that could be typed in are:

WATER (IN LITERS) WASTED IN:

Drops mL L Hour Day Week Month

Students could first do the computation to find the answer when the drip is 10 drops per minute. Then they should generalize the problem by writing formulas that could be used for any number of drips. As they determine formulas to obtain other needed information, they continue to reinforce math concepts that have been learned.

Many science problems give students experience in making predictions. For example: If a candle is burned in a one-liter container, how long will the candle burn? What will happen if the size of the container is doubled? tripled?

The experiment should be performed to confirm the prediction; then students can generalize a formula for any size container, and can get the answers almost immediately with *VisiCalc*.

Mathematics

There are many applications in mathematics on the intermediate level. *VisiCalc* can help perform the calculations and make comparisons and generalizations.

- Have students use geoboards to determine the number of diagonals of different polygons and record their findings on the spreadsheet. After they look for patterns, they can generate a formula that can be replicated for any polygon.
- Survey results can be recorded on *VisiCalc*, giving the students opportunities to discover relationships, make hypotheses and reinforce work with percent.
- Skills of finding patterns and generating a formula can be developed in changing degrees Celsius to degrees Fahrenheit, as well as in discovering Time/Rate/Distance relationships.

Social Studies

Here's a *VisiCalc* application for students studying the Pioneer Movement. Assuming settlers had a given amount of money to make the trip, a budget could be made for food, clothing, ammunition, supplies and miscellaneous. Hypothetical actual expenses should be compared with anticipated expenses, and predictions made about how long the money would last. Many "what if . . ." questions can be considered in this and other social studies applications.

VisiCalc As a Management Tool

Record keeping can be a very time-consuming task in an individualized program. With *VisiCalc*, students can keep up with their progress. A template may be made in which individual assignments are listed, with columns for the number of correct responses, number of possible responses and percent of correct responses.

The use of *VisiCalc* in the elementary school can be started on a very simple level, as described here. After students become proficient with the operating skills of *VisiCalc*, however, they should be challenged to identify additional uses for *VisiCalc* to help obtain solutions to problems they may encounter. The potential is great. *VisiCalc*'s built-in functions can provide students with a better understanding of functions; the SUM and AVERAGE functions are well within the grasp of intermediate-grade students, and the knowledge that elementary school students gain in using *VisiCalc* can be applied in many courses as they progress through school. END ■

[An excellent book for the student of VisiCalc *is* The VisiCalc Book *by Donald H. Bell (Reston, 1982). The book is written in several editions that are compatible with different computers.*

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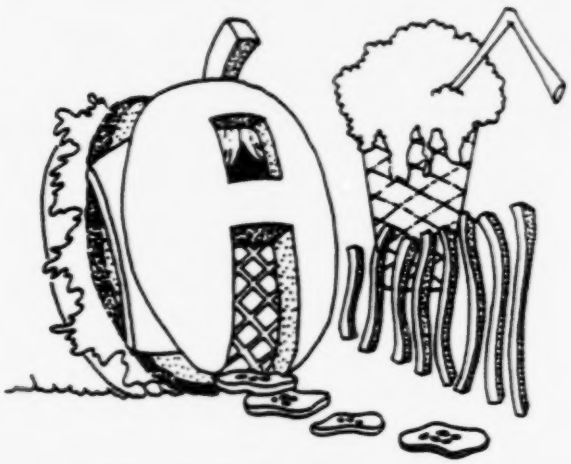

Stepping Through Fast-Food Land: A Spreadsheet Tutorial

by
Deborah E. Blank

This exercise will acquaint you with how to use *VisiCalc*,™ the popular spreadsheet program. Although the directions are written specifically for use with Apples, they vary only slightly for other systems. In step-by-step fashion, you will visit three fast-food restaurants and record and compare prices on similar items.

What Is a Spreadsheet Program?

Programs such as *VisiCalc* are electronic worksheets used primarily for business applications such as accounting and other tasks which require numerical analysis. The spreadsheet itself is a very large graph (see figures 1, 2 and 3). Each position on the graph can represent a number (value) or a word (label). Each position can also store a formula that performs a mathematical function involving one or more other positions on the graph. For example, a number in position A1 can be added to a number in position A2, and the sum can appear in A3. The contents of positions A1 and A2 would be the numbers (values) that we wish to add; the contents of position A3 would be the formula to add those numbers (@SUM A1 + A2). Because the spreadsheet is essentially a calculating graph, it can be used for many purposes.

Moving Around on the VisiCalc Spreadsheet

Learning to control the *VisiCalc* cursor is a bit like learning to play a video game. At first you will probably feel that your brain and fingers are disconnected; each move will have to be thought through entirely before you press any keys on the keyboard. Rest assured—within a relatively short time the cursor moves will become automatic.

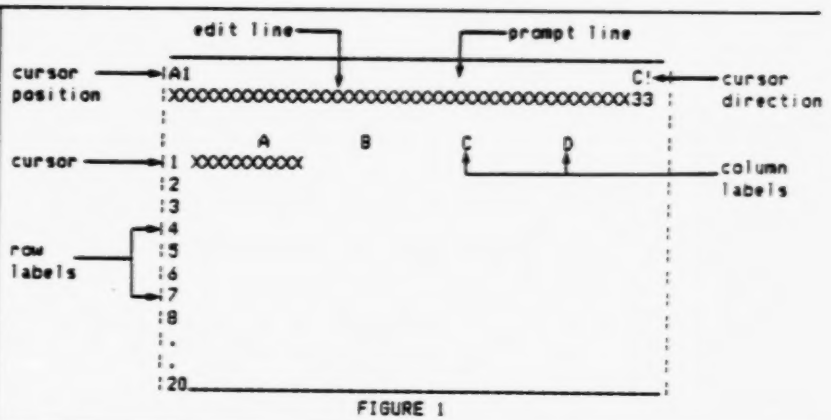

FIGURE 1

Here's how to do it:

1. After the *VisiCalc* program is loaded into the computer, you will see a blank spreadsheet on the monitor screen. The cursor, which is a long, highlighted rectangle, will be in the uppermost left position of the spreadsheet (column A, row 1, or cursor position A1). The cursor position is always displayed in the upper left corner of the screen (see figure 1).
2. Now look in the upper right corner of the screen. You will see the letter C and either a "!" or a "–" beside it. The ! indicates that the cursor is ready to move vertically. The – indicates that the cursor is ready to move horizontally.
3. Keep your eye on the ! or the –. Press the space bar and watch it change to the opposite indicator. Continue pressing the space bar until you feel you have command of the indicator. Then leave the indicator set at !.
4. Look on the keyboard for the right and left arrow keys. Press the right arrow key and watch the cursor move down the sheet. Now press the left arrow key and move the cursor to the top of the sheet. Also observe how the cursor position indicator changes. You will hear a beep if you bump into the edge of the spreadsheet.
5. Now press the space bar to change the cursor direction indicator to –. Move the cursor horizontally with the right and left arrow keys.
6. A natural question at this point is, "How big is this spreadsheet, anyway?" To find out for yourself, move the cursor right until you bump into the right edge of the sheet. Then move it down until you bump into the lower right corner. Look at the edit line (see figure 1) and locate the cursor position indicator in the upper left corner of the screen. The position BK254 is the last place on the sheet where

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data can be entered; the spreadsheet has 254 rows and 63 columns.

7. You can move to A1 (or any other coordinate position) quickly using the following method. Type >. The prompt line (see figure 1) should read GOTO: COORDINATE. Type A1 or any other position and press RETURN. The cursor should move to this position. GOTO can be summoned at any time by typing >. Try moving to several other coordinate positions using GOTO.

How to Correct Mistakes

1. To correct errors in the edit line (see figure 1) before you have pressed RETURN, hit the key marked ESC until the error is erased. (This works like the back arrow key usually does.)
2. If your entry does not please you and you have already pressed RETURN, simply move the cursor to the offending position and retype your entry.
3. If an entry appears at a position where you do not want any entry at all, move the cursor to the position and type /B and RETURN. The error will be blanked out.
4. If the whole sheet displeases you and you wish to begin again, type /C. The edit line will read "TYPE Y TO CONFIRM." Type Y. The screen will go blank and a fresh spreadsheet will appear.

How to Enter Values and Labels

1. The instant you press a key, the program indicates that either a label or a value is being entered. Press any letter and look at the left side of the prompt line. The entry has been interpreted as a label. Clear this entry completely by pressing ESC until the word "label" disappears. Now press any number and look at the prompt line; it should read "value."
2. Type any label or value and press RETURN. Your entry is now stored in coordinate position A1. Clear the position by typing a new entry over the old or by using the command /B (see section above). Continue entering and clearing values and labels until you feel comfortable with the procedure.
3. Occasionally you will want to enter a number as a label (such as 1985), or a letter as a number (such as when you are adding coordinates: A1 + A6). To enter a number as a label, type " before entering the number. To enter a label as a number, type + before entering the letter. Try a few of these before going on.

Stepping Through Fast-Food Land: Part I

1. Make sure the cursor is located in A1 and the spreadsheet is clear of all entries.
2. Type H as the first letter of your entry. The prompt line should read LABEL and the H should appear in the edit line and in A1. Finish typing HAMBURGER and watch it appear in the edit line and in A1.
3. Press RETURN to store the label in A1.
4. Move the cursor to B1 and type a price such as 1.50. Note that the prompt line reads VALUE.
5. Press RETURN to store the value in B1. Note that the price appears as 1.5. This will be corrected later.
6. Continue entering lines in the A column (rows 2 through 4) and corresponding prices in the B column (rows 2 through 4). (See figure 2.)
7. At A6, type the label TOTAL.
8. At B6, type @SUM and then press the space bar to add a left parenthesis to the formula in the edit line. Now type B1, a period (an ellipsis will appear) and B4. This tells the computer that you want to total all figures from B1 to B4. Press RETURN, and the sum will automatically appear in B6.
9. Change one of the values in the B column. Note how the total changes.
10. It would be nice if the prices looked like dollars and cents. To do this, you will make a global change (that is, all numbers will respond to your command) to a format that prints two decimal places. First type /. Look at the prompt line to see all of the *VisiCalc* command symbols. You have already read about C (clear) and B (blank). G is for global (which means change all figures, as opposed to a local change). Press G. The letters C O R F will appear. Press F for format. The prompt line will change to a choice of L (left align), R (right align), I (integer), and $ (dollar). Press $. Your dollar amounts should now look more conventional.

```
A1                                                    C!
                                                      33

        A          B          C          D
1 HAMBURGER      1.5
2 FR. FRIES       .5
3 SHAKE          .75
4 COOKIE         .50
5
6 TOTAL          3.25
7
8
.
.
20
```

FIGURE 2

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Freedom of Choice in Fast-Food Land: Part II

Suppose you want to compare prices for the same meal at different fast-food restaurants (see figure 3). Here's how:

1. First, the sheet should have headings for the columns. To make room for them, put the cursor at A1 and type /I for insert (another command in the command line). The prompt line will read R C. This means you can insert a row or a column. Since you need a new row, type R.
2. At A1, type a heading such as MENU, and at B1, C1 and D1 enter the names of restaurants. You may want to abbreviate so that the names do not run into one another. (For other ways to expand the width of the columns, see the *VisiCalc* manual.)
3. Insert another row at A2 so that a space is created between the headings and the data.
4. Enter prices in columns C and D.
5. Now, for the totals. The @SUM formula that you entered into B6 is now in B8. (Move the cursor to B8 to verify this.) Instead of writing @SUM statements again for the other column totals, you can replicate the original formula (now in B8) for use in C and D.
6. Make sure that the cursor is on B8 and then type /. The command symbols will appear in the prompt line. Type R for replicate and RETURN.
7. The prompt line is requesting the positional range of information to be replicated. Since the formula is located only in B8, press RETURN. The edit line will read B8 . . . B8.

```
A1                                                    C1
                                                      33

        A          B          C          D
1  MENU         MAC'S      ROY'S    WENDY'S
2
3  HAMBURGER     1.50       1.75       1.30
4  FR. FRIES     0.50       0.60       0.50
5  SHAKE         0.75       0.80       0.75
6  COOKIE        0.50       0.50       0.60
7
8  TOTAL         3.25
.
.
20
```

FIGURE 3

8. The prompt line now is asking for the target range (positions) in which the formula is to be used. Type C8, a period (three will appear), and D8 (C8 to D8 is the target range). Press RETURN.
9. The program now asks if there is to be NO CHANGE in the formula or if it is to be made RELATIVE to the new position. Since we want it to be relative (i.e., we do not want the sum of B2 to B4 for our new totals, but C2 to C4 and D2 to D4 instead), type R for relative. B2 and B4 are highlighted in the prompt line (the highlight will automatically move from one to the other).
10. Correct totals will appear in C8 and D8. Move the cursor to these positions to verify that the @SUM formula is the correct one. Make changes in various entries and watch them be immediately reflected in the totals row to see what is meant by the "power of *VisiCalc*."

*Summary of Commands Used in This Tutorial**

Symbol	Name of Command	Function
/B	Blank command	Blank a single entry
/C	Clear command	Clear the entire sheet; Y confirms
/G	Global command	Affect all entries on sheet
/F	Format command	Format entries
/$	Dollars and cents	Change values to dollars and cents
/I	Insert command	Use R or C to insert row or column
/R	Replicate command	Copy an entry into another position

*For a full explanation of these commands and others used in the program, refer to the *VisiCalc* manual or one of many trade books about this program.

END■

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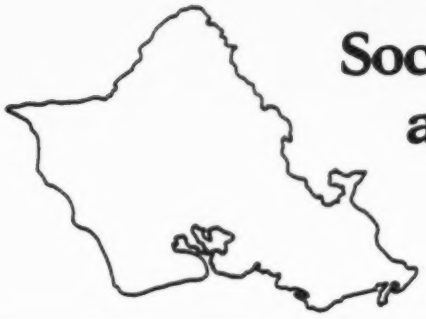
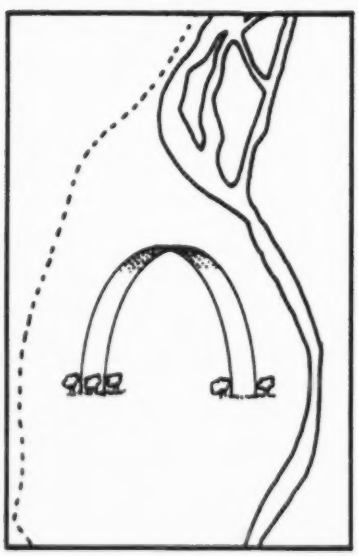


Social Studies, Spreadsheets and the Quality of Life

by
Larry Hannah

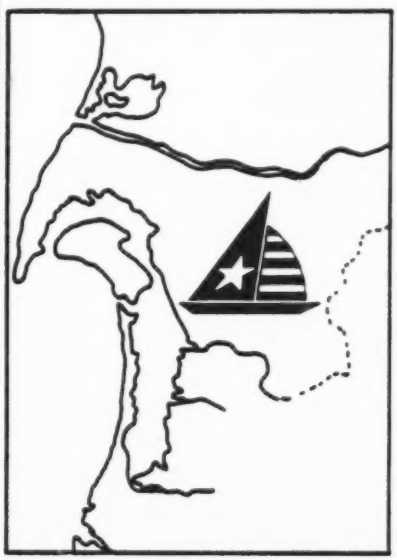


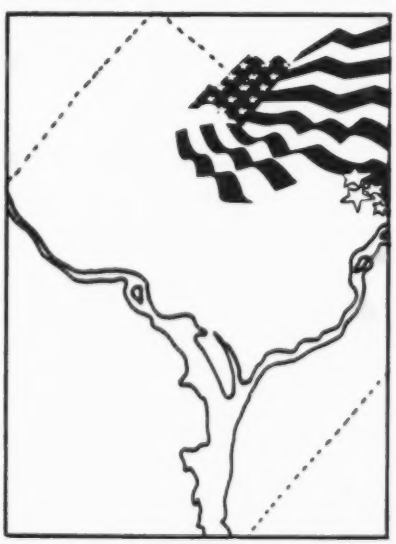
Social studies educators have begun exploring the potential of data bases for teaching and learning social studies concepts. The spreadsheet is also a promising tool, though many social studies teachers may associate it with math and overlook its potential.

This "Quality of Life" spreadsheet activity was designed to introduce discussion on the subjective nature of statistics. I developed it for my computer applications class of 24 junior high school students participating in a 1985 summer session program for gifted students at California State University, Sacramento. Prior to the activity, students worked with *AppleWorks* using both data base management and word processing, and learned how to enter values, labels and formulas into spreadsheets.

"On the Move" (see worksheet 1) started students thinking about the livability of some quite different cities. Each student read the list and ranked the cities, one through 12. Their votes were then tallied using a spreadsheet (see figure 1). To weight the votes, each first place vote was multiplied by one, second place by two, third place by three, etc. "The best place to live" was the city with the lowest point total. This activity grabbed students' attention and demonstrated how weighting is used in statistics and how they can apply a spreadsheet in a practical situation where they have a personal interest.

When all the votes were tallied, Honolulu emerged as "the best place to live," followed by Miami and San Diego. Students voted Pittsburgh, Atlanta and Buffalo as least desirable. After the weighted spreadsheet was introduced and reviewed, students discussed the factors that led them to give particular cities





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Rating Places: An American Tradition

Passing judgment on different locales isn't just a current pastime; Americans have been at it for quite a while. To entice seventeenth-century colonists to pick Maryland over Virginia, promoters assembled figures showing heavier turkeys, more plentiful deer, and fewer deaths from foul summer diseases and Indian massacres, all yours if you settled in the northern reaches of Chesapeake Bay. In the nineteenth century, many northern observers connected the South's slave holding and rebellious ways with the region's broilingly hot climate and an overabundance of lunatics, drunkards and wastrels per capita.

In our own century, the process of comparing places has borrowed a great deal from statistical methods. One of America's educational pioneers, E. L. Thorndike, in the late 1930s devised a "goodness index" drawn from 39 indicators for measuring a city's day-to-day living. Since then, others have jumped into the rating game. In 1983, Prof. Murray Strauss, a sociologist at the University of New Hampshire, selected factors such as divorce, mortgage foreclosures, high school dropouts, personal bankruptcies, abortions and new welfare cases to determine the most "stressful" states. Nevada and Alaska were numbers one and two on the stress list. And the most laid-back state, according to the indicators? Nebraska.

Each of the 329 metro areas is rated (by *Places Rated Almanac*) by criteria that most people thinking of moving would deem important.

- **Climate** is rated on mildness; that is, how close temperatures remain to 65 degrees Fahrenheit throughout the year.
- **Housing** is compared in terms of dollar costs. We look at prices for single homes, plus the taxes and utilities a would-be homeowner can expect to pay. We also note the supply of apartments,

	1*	2*	3*	4*	5*	6*	7*	8*	9*	10*	11*	12*	POINTS	RANK
Honolulu	11	10	12	8									41	1
Miami	5	20	12	8	5								50	2
San Diego	3	8	21	12	10	6		16					76	3
Washington, D.C.			3	8	35	36	7	16	18	10			133	4
Denver	1	4	3	16	10		27	8	27	20	22	12	150	5
Chicago	1	2	3	8	10	18		8	36	30	44		160	6
Houston			9	12	10	6	7	8		70	11	36	169	7
St. Louis						24	28	56	18	40	11		177	8
Portland	1			4	5	18	21	8	45	20	33	24	179	9
Pittsburgh				12	20	6	14	8	27		33	60	180	10
Atlanta					5	12	42	16			55	60	190	11
Buffalo						6	14	32	27	30	33	72	214	12

*Weighted by multiplying the number of votes times the rank.

Cities Ranked by Students in "On the Move"
Figure 1.

high or low ratings.

The students next were introduced to the inspiration for this activity, Rand McNally's *Places Rated Almanac: Your Guide to Finding the Best Places to Live in America.* In the Rand McNally ranking of 329 metropolitan areas in the United States, the students' favorites didn't do quite as well. Honolulu was 61st rather than 1st, Miami was 52nd, and San Diego was the 28th ranked metropolitan area nationally. How did the students' least favorites do? Last place Buffalo was ranked 13th nationally, far better than even San Diego. Eleventh ranked Atlanta was also 11th in Rand McNally, but 11th of 329, not of 12. Pittsburgh, a city whose best rating by any student was 4th in the nation (mostly because of its football team), was rated by Rand McNally as the best place to live in America.

The discrepancies sparked a lively discussion and, much to my relief, inquiries as to how Rand McNally reached its conclusions. I gave each student a packet to read that included: 1) an excerpt from the Rand McNally study discussing its criteria and the tradition of rating places (see "Rating Places: An American Tradition," left); 2) an article from the *Sacramento Bee* describing a study by a State University of New York geography professor which knocked Sacramento from 113th to 207th place; 3) two articles by a local newspaper columnist discussing errors he had found in the *Places Rated Almanac*; and 4) a 1975 *Time* magazine article showing Sacramento as rated 2nd in the nation (of 65 cities, with Pittsburgh rated 49th). Chauvinistic though they were, the articles did spur the students' interest in the topic and a lively discussion ensued.

The students returned to spreadsheets to practice ranking and rating cities. I gave them a page from the *1985 World Almanac and Book of Facts* titled "Quality of Life in U.S. Metropolitan Areas: A Comparative Table," giving economic and climatic data (e.g., income, jobless rate, mean number of clear and cloudy days). We discussed how different assumptions, biases and value judgments led to differences between Rand McNally's and their own ratings of the 12 cities in "On the Move." These differences influence both the selection and weighting of data. I showed them how rankings can be skewed by giving enough weight to any one factor. Buffalo, for example, would come out first if we gave enough weight to average August temperature and decided cooler temperatures are better than warmer ones. In order to practice, groups of four students created their own spreadsheets to rate the cities after deciding which factors to include and with what criteria to weight the rankings. Their spreadsheets were shared and discussed.

Then the competition began.

"The Competition" (see worksheet 2) is based on events that took place in 1984 when several U.S. cities actively sought to "sell themselves" to the backers of a $150 million electronics research and development center seeking a home. That contest was ultimately won by Austin, Texas. Each team of students

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in our competition began by drawing from a hat the name of the city the team would represent. The cities were all closely grouped in *Places Rated Almanac*, with Sacramento added for local interest and to give them a basis for relating to the data with which they would be working. Teams were given the following tasks and rules.

Tasks

1. Devise a spreadsheet that will demonstrate that your city is the #1 place to locate the research center.
2. Prepare an argument, based on your spreadsheet, that identifies your city as #1 and includes rationale for including the data categories you selected.
3. Make an oral presentation of your team's findings.

Rules

1. All data included in your spreadsheet must be available for all the cities, including Sacramento.

Dallas/Fort Worth

City	Unemploy	Rank	Population	Rank	Pro % Income	Rank	Per cap Income	Rank	Pop Density	Rank	Airport	Rank	TV/ Radio	Rank	Winner by Rank
Dallas	5.1	1	904078	2	3.6	1	13846	3	2715	1	2	1	63	1	10
San Jose	7.4	3	629442	3	3.6	1	14998	1	3984	4	0	3	19	6	21
Denver	5.3	2	492365	5	3.2	3	13964	2	4435	5	1	2	42	4	23
Atlanta	7.6	4	425022	6	3.4	2	11590	6	3244	3	1	2	49	3	26
Philadelphia	7.9	5	1688210	1	1.9	5	11946	5	12413	7	1	2	59	2	27
Seattle	9.8	6	493846	4	3	4	13239	4	5879	6	1	2	49	3	29
Sacramento	11.3	7	275741	7	3.2	3	11176	7	2872	2	0	3	29	5	34

Philadelphia

Metro Area	# Of Sport Teams	Rank	Major Museum	Rank	City Park	Rank	Crime Rates	Rank	Major Zoos	Rank	Population	Rank	Hospital	Rank	Total Rank Score
Philadelphia	4	1	4	1	219	2	3785	2	2	1	1,688,210	1	124	1	9
Dallas	3	2	2	2	256	1	9821	7	2	1	904,078	2	42	3	18
Seattle	3	2	1	3	178	4	4986	3	1	2	493,846	4	27	5	23
Atlanta	3	2	1	3	164	6	7896	6	1	2	425,022	6	59	2	27
San Jose	0	7	1	3	200	3	5298	4	1	2	629,442	3	5	7	29
Denver	2	5	2	2	155	7	5362	5	1	2	492,365	5	34	4	30
Sacramento	1	6	1	3	168	5	2979	1	1	2	275,741	7	14	6	30

Students' Spreadsheets for Dallas/Fort Worth & Philadelphia
Figure 2.

Philadelphia

Metro Area	# of Sport Team	Rank	Major Museum	Rank	City Park	Rank	Crime Rates	Rank	Rank *3	Major Zoos	Rank	Population	Rank	Rank *3	Hospital	Rank	Total Rank Score
Sacramento	1	6	1	3	168	5	2979	1	3	1	2	275,741	1	3	14	6	28
Philadelphia	4	1	4	1	219	2	3785	2	6	2	1	1,688,210	7	21	124	1	33
Seattle	3	2	1	3	178	4	4986	3	9	1	2	493,846	4	12	27	5	37
Atlanta	3	2	1	3	164	6	7896	6	18	1	2	425,022	2	6	59	2	39
Denver	2	5	2	2	155	7	5362	5	15	1	2	492,365	3	9	34	4	44
Dallas	3	2	2	2	256	1	9821	7	21	2	1	904,078	6	18	42	3	48
San Jose	0	7	1	3	200	3	5298	4	12	1	2	629,442	5	15	5	7	49

Philadelphia Spreadsheet Modified by the Author
Figure 3.

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2. Your data may be from any source, but must be valid.

3. You will need to document sources and provide them if challenged.

The *Sacramento Bee*, the local publisher of the *World Almanac*, has donated a class set of the *Almanac*. It includes information on such diverse areas as geography, climate and sports teams. The teams were encouraged to find other sources to augment the *Almanac*, remembering that the choice of data and use of weighting would have to be defended in their oral presentations.

After the teams prepared their spreadsheets, each group made an oral presentation. Four of the six teams prepared good spreadsheets. One team devised a fine spreadsheet, but rated their own city fourth. (They got the "Truth in Advertising" award.) The sixth team managed to type anecdotal information into the spreadsheet. Interesting, but not a winning presentation. Primarily due to time constraints, none of the teams were able to include weighting in their spreadsheets after all.

Figure 3 illustrates how weighting and different value assumptions can completely change conclusions. The Philadelphia spreadsheet in figure 2 has been modified to reflect assumptions that "small is better" in terms of population and a low crime rate is of utmost importance. In light of these assumptions, those two factors have been given three times the weighting of others.

As is the case with most pilot projects, there are a few things I will change the next time I teach this unit. First, I'll ensure adequate time to weight the data. Next, I'll try to incorporate a unit on statistics. Finally, I'll have students do a written presentation on their city, including use of the Clipboard function of *AppleWorks* to move data from the spreadsheet onto the word processor.

"Quality of Life" was a key element of a project designed to show use of the microcomputer as a tool in learning social studies concepts and skills. Both the spreadsheet and data base management can be integrated into social studies instruction; "Quality of Life" illustrates just one such application.

[Larry Hannah, P.O. Box 119, Shingle Springs, CA 95682.]

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Richard Boyer and David Savageau, *Places Rated Almanac: Your Guide to Finding the Best Places to Live in America*. Rand McNally & Company, Chicago, 1985.

1985 World Almanac and Book of Facts. Newspaper Enterprise Association, New York, 1985, page 113.

mobile homes and condominiums, as well as rental costs.

- **Health care** is evaluated on the basis of the supply of general health care facilities and special options available.
- **Crime** is measured by the annual number of violent and property crimes per 100,000 population.
- **Transportation** measures both assets and performance, including local commuting time, public transit, and the supply of intercity travel options by way of air, rail and interstate highway.
- **Education** ratings are based on each metro area's elementary and secondary school systems as well as options in higher education.
- . . . **Arts** compares cultural assets, among them museums, libraries, opera companies and symphony orchestras.
- **Recreation** also rates assets, from good restaurants to public golf courses, zoos, professional sports teams, inland lakes and national parks acreage.
- **Economics** looks at local living costs, household income, tax bites and the metro area's recent track record for job and income growth.

You may not agree with our rating system. If you like, you can devise your own method using the vast array of data presented. You may rule out metro areas with more than one million people. As long as summers aren't hot, you may not care a hoot for relative humidity, wind speed and rainfall. You may have little interest in wildlife refuges or ocean shorelines but place a premium on good public schools. For you, a medium-sized metro area with good public transit and a record of job expansion may be more desirable than one with an abundant supply of performing arts and professional sports attractions.

Excerpts from: Richard Boyer & David Savageau, "Rating Places, An American Tradition," in Places Rated Almanac, Chicago: © 1985 Rand McNally.

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On The Move

Changes require that your family move from Northern California. There are 12 cities where your parents have been offered employment that is inviting. As part of the family, you have been asked to rank the following cities in terms of their desirability. Rank each of these cities in order of your preference.

(1 - highest; 12 - lowest)

Rank	City
____	Atlanta, GA
____	Buffalo, NY
____	Chicago, IL
____	Denver, CO
____	Honolulu, HI
____	Houston, TX
____	Miami, FL
____	Pittsburgh, PA
____	Portland, OR
____	St. Louis, MO
____	San Diego, CA
____	Washington, DC

Worksheet 1.

THE COMPETITION

Six cities are in competition as the site for the world's newest and largest computer research facility. Winning the competition literally will mean billions of dollars in economic growth over the next 20 years for the city selected.

As members of the Chamber of Commerce Industry Recruitment Team for your city, your task is to prove statistically that your city is the best of the six. You can use any data that is accurate and available for all six cities.

The best argument will win the competition!

RANKING

- ☐ Atlanta
- ☐ Dallas-Ft. Worth
- ☐ Denver
- ☐ Philadelphia
- ☐ San Jose
- ☐ Seattle

Worksheet 2.

Reprinted from The Computing Teacher, February 1986, Vol. 13 No. 5.

Make Spreadsheets Make Sense: A Model for Introduction

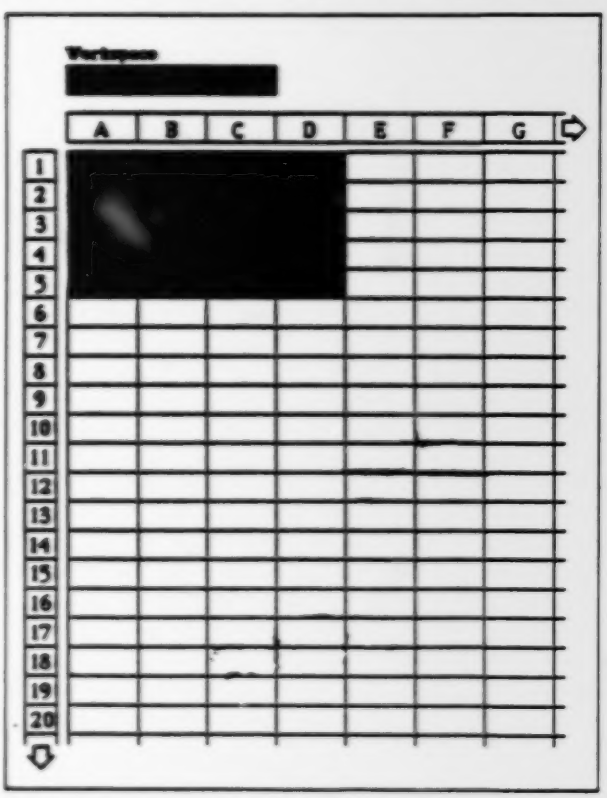
by Doris Carey and Regan Carey

Learning to use the microcomputer is much like learning to ride a bicycle. In most cases, the best way to learn how a particular program works is to simply start using it. Most of us learned to ride a bicycle by getting on (with a bit of assistance) and just beginning to pedal. We wobbled, perhaps even fell once or twice, but eventually the bicycle balanced and straightened and did what we wanted it to do.

Some skills, however, are not best learned by experience. One example is learning to ride buses in a big city. Though riding a bus is not a complex task, the rider must have an idea of the layout of the city, bus routes, transfer points and fares. It helps to look at a map of the bus routes before getting on.

Learning to use an electronic spreadsheet is similar to learning to ride a bus. In each case, the learner's view is limited to a small portion of the environment, but a mental model of the larger picture is needed in order to function effectively.

Our experience in introducing spreadsheets to new users reveals that many students and teachers do not have a good mental model of the spreadsheet. They may never have seen a ledger page or have any idea of how rows and columns are used to arrange titles and text, figures and sums.



The first step in introducing electronic spreadsheets is to define their structures and operations. Since everyone will use different spreadsheet programs, we emphasize that the structures and operations we are defining are features of all electronic spreadsheets.

In order to explain the need for establishing structures and operations, we turn to the structure of language. In any language letters, symbols and punctuation are combined into words, sentences and paragraphs. In the composition process we make use of operations such as writing, editing, inserting, deleting, etc.

In the electronic spreadsheet the user works with strings, formulas and values. The structures of the spreadsheet are cells, rows, columns, a workspace and a window. Operations include entry, editing, calculating and various file operations.

We have had great success with a spreadsheet model we use with an overhead projector (see page 63). The transparency includes the array of cells in rows and columns with a workspace at the top left corner. We cut out a piece of colored acetate large enough to cover four cells horizontally and five cells vertically, to use as a window. A light color such as pink or yellow works best. Another small piece of acetate in a contrasting color, cut to the size of a single cell, is used as a cell cursor. We cut out several small pieces of pink or yellow acetate to use for the workspace.

Using the projected model you can demonstrate how the cursor moves from cell to cell. You write the cell number on the left side of the workspace, giving students a chance to become familiar with the use of coordinates to identify cell locations. When the cell cursor is at the right or bottom edge of the window, ask students how it can be moved to a cell outside the window area. When they suggest moving it one position to the right, or down, you demonstrate how the cell cursor "drags" the window with it. Be sure to also change the cell number in the workspace. Students are able to see the entire spreadsheet while remembering that what is visible in the overhead's window will be all they see on screen.

The transparency model can be used to show how numbers and formulas are entered into the workspace and how they subsequently appear in the cell after the user presses the RETURN key. Enter a formula into the workspace, along with the cell number. Then, by "pressing RETURN," enter the correct numerical value into the corresponding cell. Be sure to write directly on the transparency, not on the colored window. Next simulate what happens when the cell cursor is moved to

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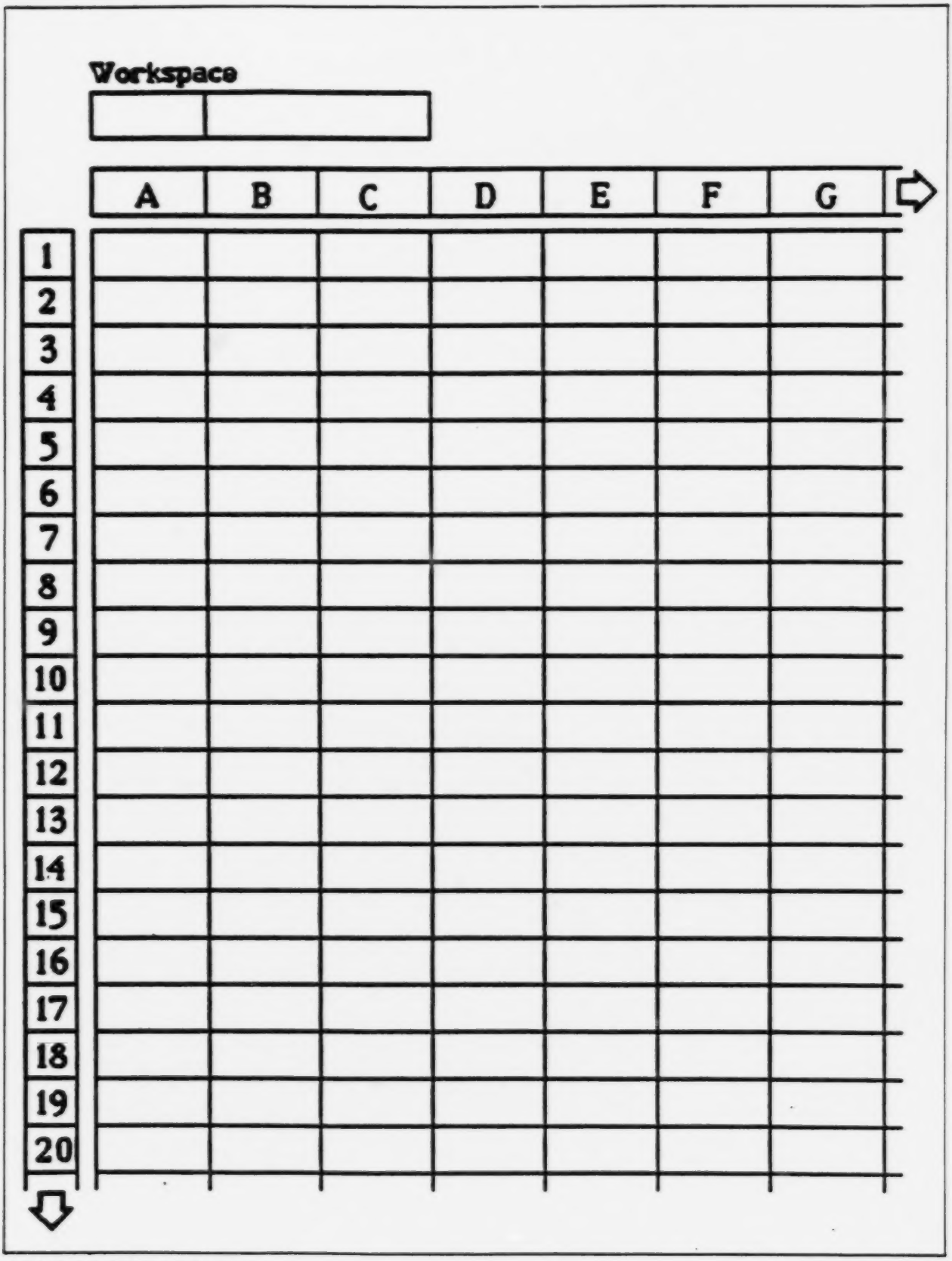

AN I.C.C.E. COPY ME PAGE

by Doris Carey and Regan Carey

an adjacent cell by putting a blank piece of acetate in the workspace and writing the new cell number on it. Move the cursor back to the previous cell and return the previous piece of acetate with the formula still showing to the workspace. This simple activity helps students see how the computer "remembers" formulas and how they are used in the recalculation process when new values are later entered into other cells.

Use this model for a brief (30-minute) introduction to electronic spreadsheets. Its potential for introducing new spreadsheet concepts is virtually limitless. Overlays with numbers and text already entered can be used to demonstrate templates. Strips can be cut out to represent rows and columns as they are inserted, deleted and moved. Colored acetate arrows can be used to demonstrate pointers to various cells.

This model is an effective way to give students an accurate mental model of the spreadsheet. Once familiar with the general concepts, students are prepared to tackle the more advanced intricacies of a variety of spreadsheet programs.

The entire model can also be developed in a medium other than a transparency and acetate pieces. A large poster can be used with a cardboard frame (a framed transparency works) to serve as a window. The poster can be laminated for unlimited reusability.

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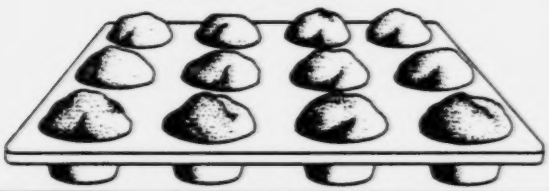
Reprinted from The Computing Teacher, April 1986, Vol. 13 No. 7.

Spreadsheets: More Than Just Finance

by
Arthur Luehrmann



Herbert Peckham and I recently completed a short textbook that introduces students to common application software. The text is based on a sequence of guided hands-on activities that introduce word processor, data base and spreadsheet applications. Word processing and data base software turned out to be fairly easy to teach; motivating examples are easy to find and the basic activities—writing text and searching for information—are familiar chores for all students.

Teaching spreadsheet use is another matter altogether. Finding motivating examples that are within students' experience is difficult. Moreover, the task of learning what a computer spreadsheet is and how it works is at least as complex as learning the elements of BASIC or Logo. A spreadsheet *is* a program, in a limited language, of course. Many of the "learner traps" that occur when teaching elementary programming ideas to beginners also occur when introducing computer spreadsheets.

I realize the creators and publishers of spreadsheet software would have the public believe that these programs are virtually self-explanatory—that a person who has never used a computer before can just sit down at the keyboard, plunge right in and become an instantaneous spreadsheet wizard. Not so, and the proof is the fact that an entire training industry has grown up to teach business managers how to create spreadsheets with their PCs. Computer teachers and curriculum coordinators should keep this fact in mind.

A final point before moving on: The following discussion assumes that readers have used a spreadsheet program, such as *VisiCalc, Multiplan, Lotus 1-2-3* or the spreadsheet portion of *AppleWorks*. This article is not intended as a primer on spreadsheet use.

Choosing the Examples

The first problem to be faced when teaching about spreadsheets is choosing appropriate examples. What particular uses will be interesting but at the same time not so complex as to overwhelm students with the "power" of this tool?

This is not an easy question to answer, we found. Most "serious" applications of spreadsheets are financial. They involve a lot of number work, formulas and functions in which the typical junior-high or high-school student is not keenly interested. Worse yet, any realistic financial application would introduce dozens of new concepts at the same time. A step-by-step approach works far better.

The best starting point is no application at all—just a blank spreadsheet. Students' first task (after loading the software and indicating that a new spreadsheet is to be created) is to understand how to move the cursor to a cell, enter information, edit it and delete it. This is best done with a totally blank spreadsheet so that *whatever* is displayed on the screen is the result of actions taken by the student. (I will return to these early explorations in the section, "Sequencing the Concepts.")

The disadvantage of a blank spreadsheet is that it tells very little about the things spreadsheets are useful for. As soon as students are familiar with entering information into a blank spreadsheet, it is time for them to see a simple example of a complete spreadsheet. A nice one that we have used is a multiplication table. When students load file MULTIPLY from a disk, the screen looks like figure 1.

```
------A---B-----C-------D-------E-------F-------G---
 1|
 2|                  Multiplication Table
 3|
 4|              5     6     7     8     9
 5|      ----------------------------------------
 6|  5  |      25    30    35    40    45
 7|  6  |      30    36    42    48    54
 8|  7  |      35    42    49    56    63
 9|  8  |      40    48    56    64    72
10|  9  |      45    54    63    72    81
11|
12|
```

Figure 1.

The result is simple and familiar, but interesting things are hidden under the numbers in the table. Guide students to move the cursor to cell C6. The number on the screen is 25, but the cell indicator shows the *formula* 5*5. The situation in cell C7 is similar: The screen shows 30, but the cell indicator shows 6*5.

This experiment may not seem terribly exciting to people familiar with computer spreadsheets. But when beginners first look at a spreadsheet, they generally see only what is on the screen. They often fail to recognize the fact that the numbers displayed are a *consequence* of the information that defines the spreadsheet. This is a key idea, essential for work with spreadsheet programs.

This same example also introduces formulas containing *cell names*. Guide students to cell C10, which shows 45 on the screen. The cell indicator this time shows that the information in the file is not 45, nor is it 9*5. Instead, it is A10*C4. Cell A10 contains the number 9, and C4 contains the number 5. Students learn that a number can be used in a formula by giving the name of the cell that contains the number.

Then have students explore the formulas in the remaining cells in the bottom row. These formulas all refer to cell A10. (See figure 4 for a display of all the formulas in the spreadsheet.) What will happen if students change the number in cell

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A10 from 5 to 10? They make the change and see the numbers in the bottom row change immediately to 50, 60, 70, 80 and 90. Change the number in cell A10, and you change all results that depend on it: This is another key idea often not fully understood.

With the idea of cell names established, it is time to introduce simple functions. A nice, friendly example might be the scores of individuals and teams in some sporting activity. This application requires the calculation of sums and averages. Here is what a bowling team record might look like after five weeks of play:

	A	B	C	D	E	F	G
1							
2			Bowling Scores				
3							
4	Name	Week 1	Week 2	Week 3	Week 4	Week 5	Average
5							
6	---	---	---	---	---	---	---
7	Tom Jones	142	159	134	175	128	147.6
8	Fred Smith	256	240	215	228	264	240.6
9	Mary Azevedo	195	200	203	181	267	209.2
10	Sam Thomas	105	95	124	132	115	114.2
11	Susan Roth	42	208	196	231	222	179.8
12							
13	Team Total	740	902	872	947	996	891.4
14							

Figure 2.

The column at the right shows each bowler's average score. The row at the bottom shows the total team score each week. The lower right cell shows the sum of the averages. When students move the cursor to any of these outer cells, a formula containing a ***function*** appears in the cell indicator. They discover the formulas @SUM, @AVG and @COUNT as well as the use of ***cell range*** notation.

After these ideas become secure, it is time for another example, this one specialized to teach the concept of copying (replicating) a formula. A familiar, non-financial application for this is recipe doubling. You have a recipe for making muffins, but the amounts for each ingredient will make enough for only 12 muffins. What should the amounts be for 24, 36 or 48 muffins? The students load file MUFFINS and the screen looks like this:

	A	B	C	D	E	F
1						
2		Recipe for Whole Wheat Muffins				
3						
4	Ingredient	Measure	Makes 12	Makes 24	Makes 36	Makes 48
5						
6	---	---	---	---	---	---
7	Wheat Flour	Cup	2			
8	Baking Powder	Tsp	2			
9	Salt	Tsp	5			
10	Egg		1			
11	Salad Oil	Cup	25			
12	Honey	Cup	25			
13	Milk	Cup	1.5			
14						

Figure 3.

The students look at cells C7 through C13 and discover that each cell simply contains the numbers visible on the screen. What is needed in the column labeled "Makes 24" is seven formulas to double the numbers in the "Makes 12" column. Have students move the cursor to cell D7 and enter the formula 2*C7. Then teach them how to make a ***relative copy*** of the formula down the rest of column D. Finally, have them practice copying by repeating the process with the columns labeled "Makes 36" and "Makes 48."

I cannot resist telling a tale at this point. After arduous false starts, we finally hit upon the recipe idea for teaching formula replication. The original version of the recipe program was for waffles. It seemed perfect: The formula to be copied would contain only a single cell name; the application was non-financial; everyone knows how to make waffles; and you can double a waffle recipe to your heart's content without changing the quality of the result. So we created the WAFFLE file, wrote our manuscript accordingly, and shipped both off to our publisher.

In a matter of days, we received a distressed call from New York. "We can't use the waffle example. It's junk food," we were told, "and you can't use junk food in a book you want to sell in California." We protested, and our editor backed down slightly, saying, "Well, actually the waffles are okay, but they're always eaten with syrup. Syrup is sugar, and in California anything that has lots of sugar is junk food."

What to do? We had this dream example, but our editor was confident that some committee in Sacramento (who probably fed their children waffles once a week) would throw out a computer book because it mentioned a food that might be used with a sugar product. Should we get the California Sugar Beet Growers involved? No, that would take too long. Our editor began searching through the *Tassajara Cookbook* for something pure enough to satisfy the committee, but we all agreed that kids probably wouldn't go for anything made with "sprouted buckwheat flour."

A compromise suggestion was whole wheat muffins: not exactly a treat to make the average junior high student shiver with excitement, but better than sprouted buckwheat. We actually baked up a batch, and they weren't bad.

But I digress. The main features of the spreadsheet examples described above are these: They are familiar to all students, they require a minimum of math background and, most important, they each introduce one or two fundamental concepts in a careful, step-by-step manner. The specific examples we chose are unimportant, but we are convinced that any good set of examples will share these three traits.

Sequencing the Concepts

Closely related to the problem of choosing good examples is the problem of breaking the learning task into small chunks, assuring that each is understood before introducing the next. This problem is so tied up with the proper choice of examples that I have already said a good deal about it. Still, there is more to say.

The first conceptual task for the learner is to recognize that any given spreadsheet is a collection of information which may

be entered from the keyboard, edited, saved in a disk file, and loaded back into the computer's memory. To establish this idea, a good starting point is a new, empty spreadsheet, as suggested earlier. The only information it contains is what the student enters at the keyboard.

To enter information on a spreadsheet, students must first learn to move the cursor from cell to cell. The first item to be entered should be a short label, such as the word "hello." Students discover that the letters typed appear in the ***cell indicator*** as well as at the location of the cell cursor. Next have students move the cursor to another cell and type a number. This time the digits appear only in the cell indicator until the RETURN key is tapped; then the number appears in both places. From the screen prompts, students learn the terms ***label*** and ***value.***

At this point it seems as though the computer simply copies into a cell on the screen whatever you type on the keyboard. The only oddities are the fact that the typed characters also appear in the cell indicator and that the computer distinguishes between labels and values.

Screen Cells and File Cells

With this basic understanding established, it is time to introduce something truly new and different. Have students move the cursor to an empty cell and type, for example, 32 + 21. As usual, these five characters appear in the cell indicator; however, when the RETURN key is tapped, the number 53 appears in the cell where the cursor is. This little experience is a gold mine; it shows students that they can enter a ***formula*** and the computer will calculate the result and display it as ***output.***

Now is a good time to introduce new terminology that will help keep these ideas straight. Tell your class that there are two versions of every spreadsheet cell. When they move the cursor to cell B2, for example, and enter information from the keyboard, the information goes into ***file cell*** B2, which is normally visible only via the cell indicator. The characters displayed in ***screen cell*** B2 are a result of the information stored in file cell B2. If file cell B2 contains a label or a simple number, screen cell B2 displays the same label or number. But if the file cell contains a formula, the computer calculates and displays the result in the screen cell.

If you succeed in getting students to understand the difference between file cells and screen cells, they will have avoided the worst misconception in work with spreadsheets: the belief that the visible spreadsheet is the only one or the most important one. In fact, the file cells are vastly more important than the screen cells; they tell the computer what to display in the screen cells. When a spreadsheet is saved on disk, only the file cells are saved (hence the name "file cell"). When it is loaded into memory, the computer uses the file-cell information to create the screen cell display.

The idea of file cells can be made more concrete with certain spreadsheet programs, such as *AppleWorks,* which have a command for switching back and forth between viewing the screen cells and viewing the file cells. Seeing the file cells arrayed over the whole screen makes their existence a good deal more believable. For example, figure 4 is how the multiplication spreadsheet in figure 1 looks when given the command to view the file cells.

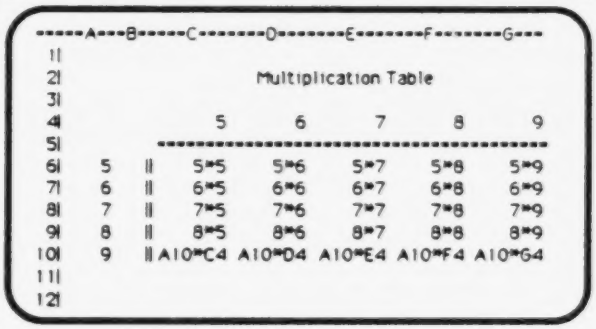

Figure 4.

Cell Names in Formulas

The need to distinguish between file cells and screen cells was triggered by a simple experience: Students entered a simple formula, such as 32 + 21, and noticed that the screen cell contained 53. Of course, useful spreadsheets rarely contain formulas with numbers alone. The next new concept to introduce, then, is the use of ***cell names*** in formulas.

For this purpose, it is best to begin with an existing spreadsheet that contains both simple formulas and formulas with cell names. The multiplication table shown in figures 1 and 4 does this job nicely. By using the cell indicator as a peep hole into the file cells, students discover that some of the formulas in the multiplication table contain cell names. As explained earlier, students can vary the number in a cell referred to by cell name (cell A10) and see new results appear immediately in the screen cells (cells C10 through G10).

A nuisance issue must be discussed at this point: If you enter a formula that begins with a cell name, the computer treats it as a label. This is the time to discuss the "first-key" rule: When entering information, the first keystroke determines whether a label or value is to be entered. An initial letter means a label; an initial numeric digit means a value. Teach the tricks for working around this situation: A quotation mark always signals the start of a label (but is not part of the label) so should be used when a label is made up of digits, such as a date or year. A plus sign always signals that a value will follow, so a formula that begins with a cell name (and therefore a letter) should be preceded by a plus sign.

Spreadsheet Functions

With cell names clearly understood, students are equipped to explore ***functions.*** Most spreadsheet programs offer dozens of built-in functions for calculating different kinds of results: square root functions, exponential functions, absolute value functions and many more. For the most part, these are esoteric topics best omitted in an introduction.

But certain functions are so essential to any useful spreadsheet that even beginners need to know about them. An obvious example is the SUM function for adding a column of figures. This topic is best introduced through examples in existing spreadsheets where their use makes sense (the bowling scores file, figure 2, is one such example). Students discover the functions, both alone and in formulas, and explore their effects.

To use these important functions, students need to know only a few things: the names of the functions, the notation for a ***range*** of cells, and the fact that functions can be used as part of a formula. A detailed discussion of syntax is probably out of order for most students.

Replicating Formulas

The topic of copying (replicating) a formula should be taken up only after all the above concepts are well understood. It is a very tricky topic, and in a basic sence, a very unimportant one.

I can almost hear seasoned spreadsheet users howling their protests over the last sentence, so let me be clear about what I mean. Copying formulas is purely an *editorial* feature of a spreadsheet program. That is, it is only an aid to the creation of a spreadsheet; once a formula has been put into a spreadsheet, there is no way to tell whether it got there by being typed manually or by being copied from another formula. One can read and understand any spreadsheet without knowing about copying.

On the other hand, no one would use a spreadsheet program that lacked the ability to copy a single formula into many locations while making suitable adjustments in the copies. This feature may be only editorial, but since most of one's time at the computer is spent in creating and editing information, the copy function can be important. Any introduction to spreadsheet use, however brief, should include this topic.

The best approach is to begin with a *very* simple example, such as the muffin recipe spreadsheet in figure.3. The first step should be to learn to copy the simplest items from one place to another. Have your students begin by copying a label, then a simple numeric value. This way they will understand the sequence of commands necessary to identify the source cell and the range of destination cells, but may ignore for now the question of ***relative*** vs. ***no-change*** modes of copying.

Once students understand the basics of copying, it is time to have them copy a formula that contains a cell name (just *one* cell name, please). If you use the recipe example, have the students do it the "wrong" way first. That is, have them copy the formula in no-change mode; after all, this is the simplest case to understand, since the cell name in the formula is copied exactly. If the original formula in cell D7 is 2∗C7, the copies in cells D8, D9, etc., will also be 2∗C7. No-change mode means that the cell name is copied just as though it were a number or a label.

Next have the students repeat the copying process for the same formula, but this time using relative mode. They will be immediately gratified to discover that each recipe amount is properly multiplied this time. By exploring the copied formulas, they can see how the cell name was "shifted" as the formula moved down the column: While 2∗C7 appeared in cell D7 originally, the copy 2∗C8 appears in cell D8, the copy 2∗C9 appears in cell D9, and so on. As the formula moved down, the cell name "moved down" with it. That is the basic idea of relative copying.

Relative copying is a slippery concept. Students get a quick, intuitive grasp of the idea, but it slips away just as fast. We have found an effective way to make it stick, and the heart of the method is to have students use "relative language" when describing a formula to be copied. Suppose, for example, that cell D3 contains the formula D2∗C3. Have students rephrase the formula like this: the contents of the cell *above* times the contents of the cell to the *left*. More briefly, the formula is "above∗left." Then explain that the goal of relative copying is to make each new formula have the same meaning as the original, when expressed in relative language. Thus, if the formula here is copied into cell G8, we want the copy also to be "above∗left." Since cell G7 is above G8, and F8 is to the left, the new copy should be G7∗F8, and that is exactly what relative copying gives us.

Once students begin to understand how relative copying works, it is essential to provide opportunities to practice what they have learned. Using the recipe example, ask them to repeat the process, creating new columns for tripling the ingredients, quadrupling, and so on.

Benefits of a Little Programming Knowledge

The basic concepts described above can be taught to first-time computer users. But if students know a little Logo or BASIC, teaching spreadsheets is vastly simpler. You need not spend time on computer fundamentals but can quickly move ahead to interesting spreadsheet applications. ***I strongly advise anyone who is planning a computer curriculum to make at least six weeks' exposure to programming in Logo or BASIC a prerequisite to instruction in spreadsheet use.*** Doubters should read on.

The basic concepts needed for work with spreadsheets are entering information, editing it, saving it on a disk, loading a disk file into memory, knowing about labels, values, cell names and formulas, and understanding that file cells contain instructions telling the computer what calculations to make

and what to display in the screen cells. Each one of these ideas is already familiar to people who have learned the elements of programming, though different terms are sometimes used.

Writing a program also requires learning how to enter information into the computer, edit it, save it on a disk, and load a disk file into memory. In the case of programming, the information is a sequence of BASIC statements or Logo commands. In the case of spreadsheets, the information is an arrangement of labels, numbers and formulas in a rectangular table.

Spreadsheet programs distinguish between two types of information: ***labels*** and ***values***. These are just new names for ***string data*** and ***numeric data***, topics covered in elementary programming classes.

A spreadsheet ***formula*** is the same thing as an ***expression*** in programming. In BASIC, for example, you can write this statement:

```
LET X = 23 * 5 + 37
```

The spreadsheet formula 23*5+37 has exactly the same meaning and effect.

A ***cell name*** in a spreadsheet formula means the same thing as a ***variable name*** in programming. The spreadsheet formula B3*A2 and the BASIC or Logo statement PRINT B3*A2 have an almost identical meaning: Go to locations B3 and A2, multiply the numbers found there, and display the result.

Programming languages have built-in *functions*, and so do spreadsheets.

The main point is this: A spreadsheet really is a computer program whose instructions are contained in all its individual file cells. The information in each file cell tells the computer what calculations to make, what result to display and where to display it.

The statements in a BASIC program are performed by the computer only when you give the RUN command. The instructions in a spreadsheet are performed whenever you make a change in a file cell. The computer performs the new instructions on the edited file cell, then goes to the file cell at the upper left corner of the spreadsheet. After carrying out the instructions there, it proceeds to the next file cell (in either row or column order) and carries out those instructions, continuing until it reaches the lower right-hand cell. All this happens very quickly, but it happens in strict sequence, just as with a BASIC or Logo program. (Many apparent "peculiarities" of spreadsheets are easily understood once the upper-left to lower-right order of execution is pointed out: for example, why recalculation is sometimes necessary when a formula in one cell refers to a cell that is to the right or below it.)

A student who understands these elementary programming concepts is far better prepared to master spreadsheets than is a student who must simultaneously develop these concepts and learn the details of spreadsheet editing: the "first-key" rule, copying formulas, relative mode, etc.

Can this argument be turned around? If spreadsheets are so similar to programs in BASIC or Logo, why not make spreadsheet skills a prerequisite for programming classes? There are two principle reasons not to. First, spreadsheet uses all focus on numeric problems, most of them quite uninteresting to students. Elementary programming activities can be based on graphics and text processing problems of far greater appeal. Second, a spreadsheet user has a very limited view of what a computer can do: Since the spreadsheet language offers only calculation, assignment and output instructions, it is like a programming language with little more than a LET statement and a fancy PRINT statement. Elementary instruction in Logo or BASIC, on the other hand, gives the student a far deeper understanding of what a computer is and what it can do.

Conclusion

In teaching spreadsheet use to beginners, a good deal of attention must be given to the choice of interesting examples. Most realistic applications are in finance or accounting, topics of little interest to the average student. Furthermore, most realistic applications are too rich; they introduce too many concepts at once. The teacher must carefully choose a sequence of examples, each of which demonstrates only one or two new features.

Closely tied to the choice of examples is the sequencing of concepts to be taught. We suggest this sequence: Entering labels and values into spreadsheet cells should come before entering formulas; formulas with only numbers should come before formulas with cell names; the idea of file cells vs. screen cells should be introduced along with formulas; functions should come after cell names and cell ranges are understood; copying (replicating) formulas should come last.

Finally, I have made a case for teaching the elements of programming in Logo or BASIC before introducing spreadsheets. If students are already familiar with computer operations, editing, data types, constants, variables, functions, assignment and output, they will be well equipped to understand and use spreadsheet software. Without this degree of computer literacy, however, a student will have to do double duty: mastering basic computer concepts while learning the unique features of spreadsheets. This situation is especially serious when, as so often happens, the main interest of the teacher is in applying spreadsheets, not explaining how they work.

[Arthur Luehrmann, Computer Literacy, 1466 Grizzly Peak Blvd., Berkeley, CA 94708.]

File:

Unit 5 Review

1.

2.

3.

4.

5.

THE WORD PROCESSOR

Line 8 Col 70

PART 2

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THE WORD PROCESSOR

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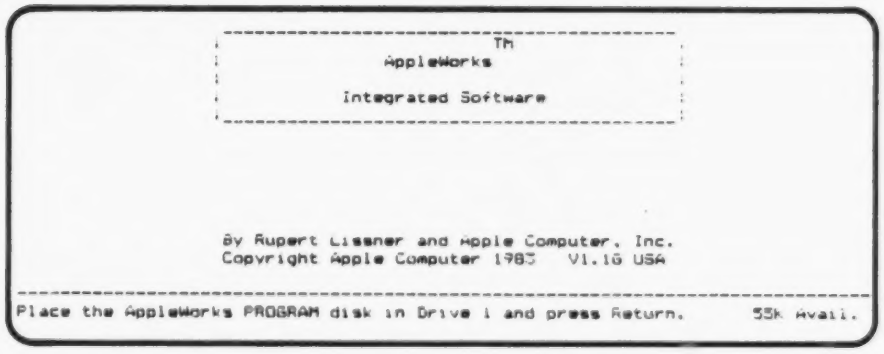
HOW TO LOAD THE APPLEWORKS™ PROGRAM

The AppleWorks program is split into two parts:

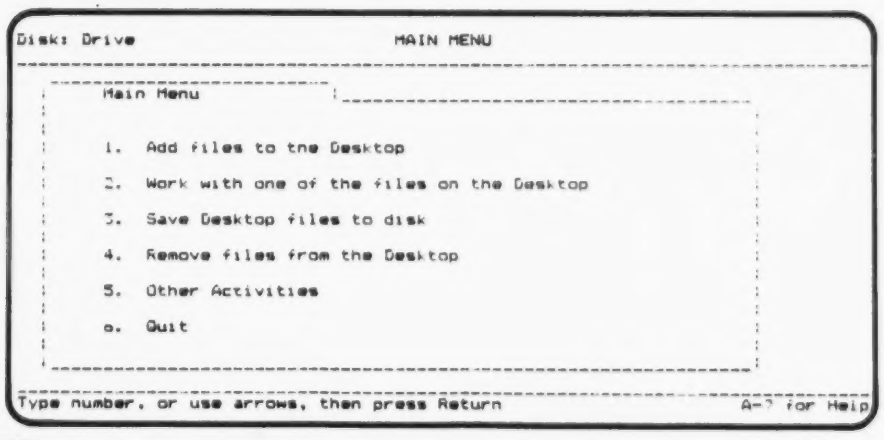
Part 1, the "AppleWorks Startup" is on one side of the disk.

Part 2, the "AppleWorks Program" is either on the back side of the same disk or on a separate disk.

1. Put the AppleWorks Startup disk in drive 1.
2. Put the data disk, that came with this packet, in drive 2.
3. Turn on the monitor.
4. Turn on the computer.
5. If it is already on, hold down the open-apple and CONTROL keys, and tap the RESET key.
6. The COPYRIGHT SCREEN should appear:


TM
AppleWorks
Integrated Software
By Rupert Lissner and Apple Computer, Inc.
Copyright Apple Computer 1983 V1.1G USA
Place the AppleWorks PROGRAM disk in Drive 1 and press Return.
55k Avail.

7. Remove the Appleworks Startup disk from drive 1.
8. Insert the Program disk in drive 1, and press RETURN.
9. Type today's date using the form shown on the screen.
10. Press RETURN.
11. The AppleWorks MAIN MENU should now be on the screen:


Disk: Drive
MAIN MENU
Main Menu
1. Add files to the Desktop
2. Work with one of the files on the Desktop
3. Save Desktop files to disk
4. Remove files from the Desktop
5. Other Activities
6. Quit
Type number, or use arrows, then press Return
A-? for Help

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EDITING WITH A WORD PROCESSOR

(what to do when you make a mistake
. . . or change your mind)

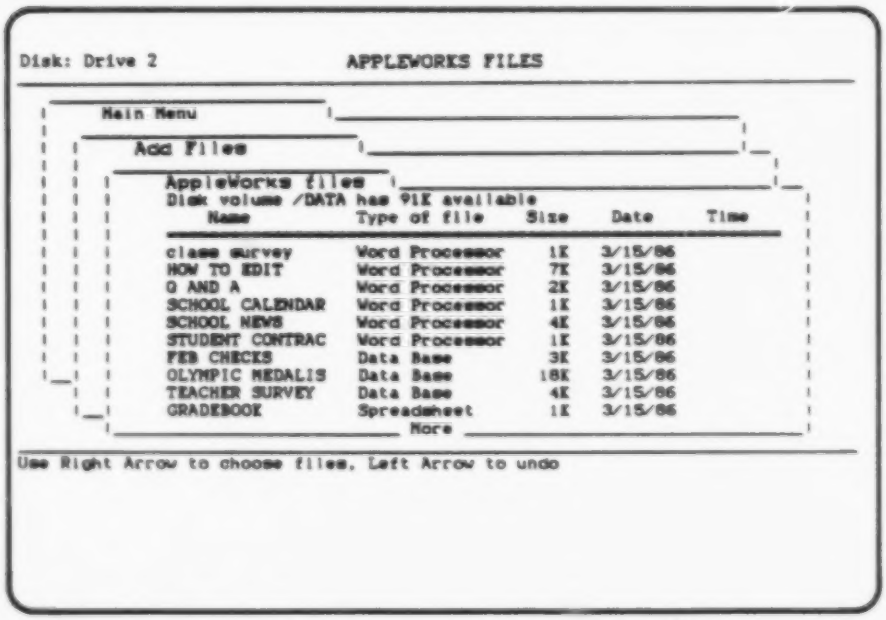
The following set of activities provides an overview of the basic editing features for the AppleWorks word processor. These activities have been designed for you and your partner to try out various methods for making corrections and revisions. Common editing features include:

* USING THE DELETE KEY TO ERASE CHARACTERS
* USING THE INSERT CURSOR TO ADD CHARACTERS
* USING THE OVERSTRIKE CURSOR TO "TYPE OVER" EXISTING TEXT
* USING THE OPEN-APPLE D (DELETE) FEATURE TO ERASE
* USING THE OPEN-APPLE M (MOVE) FEATURE TO REARRANGE TEXT
* USING THE OPEN-APPLE R (REPLACE) FEATURE TO EXCHANGE TEXT

activity 1 MAKING CORRECTIONS WITH THE DELETE KEY

PART 1 : ADDING A WORD PROCESSOR FILE

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop press RETURN
3. Select : 1. Get files from the current disk, press RETURN
4. A list of files that have been saved on your data disk will be displayed:


Disk: Drive 2
APPLEWORKS FILES
Main Menu
Add Files
AppleWorks files
Disk volume /DATA has 91K available
Name
Type of file
Size
Date
Time
class survey Word Processor 1K 3/15/86
HOW TO EDIT Word Processor 7K 3/15/86
Q AND A Word Processor 2K 3/15/86
SCHOOL CALENDAR Word Processor 1K 3/15/86
SCHOOL NEWS Word Processor 4K 3/15/86
STUDENT CONTRAC Word Processor 1K 3/15/86
FEB CHECKS Data Base 3K 3/15/86
OLYMPIC MEDALIS Data Base 18K 3/15/86
TEACHER SURVEY Data Base 4K 3/15/86
GRADEBOOK Spreadsheet 1K 3/15/86
More
Use Right Arrow to choose files, Left Arrow to undo

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5. We will work with "HOW TO EDIT".
   To select that file, type a right arrow key (-->) beside the file name "HOW TO EDIT."

6. Press RETURN.

7. When this file has been loaded into the computer, the following activity will appear on the screen:

ACTIVITY #1

USING THE DELETE KEY "TO ERASE"

They have fallen head over wheels in love.

The runner was grasping for air.

She wore a lovely string of beards.

The sister yelled "Go away! You're such a brother!"

This year the slime look is in.

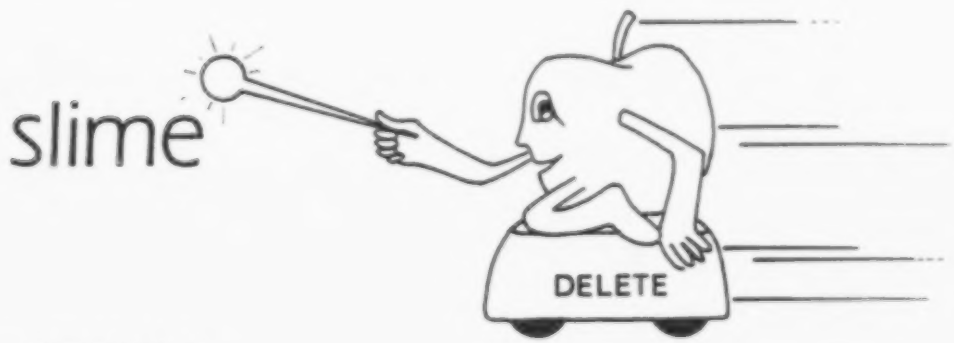
5:15 -- it's past quilting time.

Our plane was to meet for lunch.

The children enjoyed the phony rides the best.

Keep a stiff upper limp.

The golfer threw his sputter in the lake.



PART 2 : INSTRUCTIONS

1. Make sure the CAPS LOCK key is up; you will be using both upper and lower case.

2. There are 10 sentences in this first activity. Each contains an error.

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3. Use the DOWN ARROW key to move the cursor to each sentence on the screen.

> NOTE: As you move the cursor down, new sentences will scroll on to the screen, and sentences at the top of the screen will scroll off.

4. Use RIGHT and LEFT ARROW keys to move the cursor between the words and letters in each sentence.

5. Use the DELETE key to erase (remove) extra characters. Place the blinking cursor to the RIGHT of the extra letter, and press the DELETE key.

   e.g. CHRISTMAAS (place the cursor here | then press DELETE)

6. Edit the 10 sentences.

7. When these sentences have been corrected, move the cursor to the blank line <u>below</u> the last sentence.

8. Create two blank lines on the screen by pressing the RETURN key twice.

9. Next, type the word list to the right: -------> Be sure to press RETURN after each word.

1.	maid
2.	weary
3.	niece
4.	horse
5.	quiet
6.	mean
7.	pretty
8.	scent
9.	knew
10.	bath
11.	blender
12.	crust
13.	racing
14.	beard
15.	grapple

10. When done, delete one or more characters from each to make the new words defined below:

    1. angry
    2. cautious
    3. pleasant
    4. rubber tubing
    5. to finish
    6. male
    7. trivial
    8. one penny
    9. recent
    10. vampire
    11. curved part of a stream
    12. an Oregon tan
    13. falling water
    14. a place to sleep
    15. brand name computer

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activity 2 USING THE INSERT CURSOR TO ADD CHARACTERS

PART 1 : INSTRUCTIONS FOR ACTIVITY #2

1. Use the down arrow key to bring ACTIVITY #2 onto the screen:

ACTIVITY #2
WORKING WITH THE INSERT CURSOR

The cat mowed until three in the morning.

Birds of a father flock together.

They were marred in a simple service.

In the military, officers must be salted.

They asked for a set on the isle.

Cold hands, warm heat.

We waited for ours and ours.

During the storm tree houses were without electricity.

The golfer said "You go third, I'll go forth."

The young priest wore new shoes and holy socks.

The bride over the river was singing from side to side.

2. Add the missing letters to correct this set of sentences.

3. Place the cursor (the blinking line) <u>exactly</u> where you want the letter, and then type.

   e.g. CHRISMAS (place the cursor here |, type a letter T)

4. HINT: Try using the open-apple <u>and</u> an arrow key to move from word to word. Use only the arrow keys to move the cursor from letter to letter.

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5. When that editing has been completed, press RETURN twice.

6. Next type this word list: ---------->

1.	sad
2.	sap
3.	dying
4.	hair
5.	pain
6.	sippers
7.	sale
8.	book
9.	pant
10.	cot
11.	air
12.	horse
13.	side
14.	come
15.	eat

7. When done, INSERT one or more characters in each word to make the new words defined below:

1. spoke
2. to break suddenly
3. coloring
4. has arms and legs, but no head
5. not fancy
6. shoes made from banana peels
7. week-old bread
8. small stream
9. not animal or mineral
10. land near the ocean
11. table and _____
12. voiceless
13. playground equipment
14. Halley's
15. grain for making bread

8. Using the **INSERT CURSOR**, go back through the two list of **SENTENCES** and number them, from 1 to 21.

9. HINT: Use the SPACE BAR to leave a space before numbers 1 through 9 and the decimal points will line up throughout the list.

activity 3 USING THE OVERSTRIKE CURSOR TO REPLACE LETTERS

PART 1 : INSTRUCTIONS FOR ACTIVITY #3

1. Use the down arrow key to bring ACTIVITY #3 onto the screen:

ACTIVITY #3

USING THE OVERSTRIKE CURSOR TO REPLACE CHARACTERS

1. trial
2. tomb
3. pedal
4. birth
5. beat
6. steel
7. snack
8. hunch
9. sliver
10. match
11. suffer
12. presence
13. depleted
14. chicken
15. celery

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2. Begin by pressing open-apple E (to EDIT).

3. Note that the cursor has changed to a blinking rectangle.

4. You will need to position this OVERSTRIKE CURSOR <u>on top</u> of the letter you want to replace, and then type.

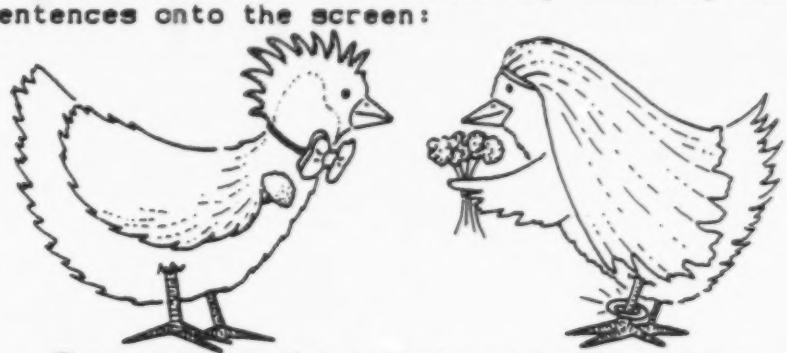
5. <u>NOTE:</u> You will need to use the arrow keys to move "over" any characters you do not want changed.

6. Be careful with the SPACE BAR. This cursor will not insert a space, but OVERSTRIKE with a space.

7. Replace one or more characters to make the following words:

   1. well traveled path
   2. has teeth, but never eats
   3. part of a flower
   4. bed on a train
   5. vegetable
   6. to take
   7. a duck sound
   8. one thing you can't have for breakfast or dinner.
   9. a white metal
   10. portable timepiece
   11. last meal
   12. a gift
   13. not victorious
   14. room for cooking
   15. income or earnings

8. When done, use the down arrow key to bring the next ten sentences onto the screen:



   1. They went to the fair to ride the roller ghoster.
   2. Look before you creep.
   3. Why are you down in the slumps?
   4. Don't count your chickens before they've hitched.
   5. Join the fight against hazardous waists.
   6. As happy as a shark.
   7. Don't put all your eggs in one casket.
   8. Necessity is the mother of prevention.
   9. Drill two boards with one stone.
   10. Absence makes the heart grow fodder.

9. When done correcting, switch back to the INSERT CURSOR.

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PART 1 : INSTRUCTIONS FOR ACTIVITY #4

1. Use the down arrow key to bring ACTIVITY #4 onto the screen:

ACTIVITY #4
USING OPEN-APPLE D TO ERASE BLOCKS OF TEXT

555 Sunnyside Street
Fastriver, OR 98765

School District 2802
Ms. Katherine Carp, Principal
123 Fourth St.
Slowriver, OR 91011
April 1, 1986

To Whom It May Concern:

Dear Ms. Carp:

I am a teacher with 12 years of experience in the elementary classroom. My wife has landed a new job with SunTech Corp and this summer I'll be moving to Slowriver. She thinks the move will be good for us, but I'm not so sure. I was in Slowriver once before and had a simply awful stay. But we had a big fight on this one already and she won. I have therefore enclosed my resume with this letter and am seeking a position with School District 2802.

When I say we had a big fight, I don't want you to think I hurt her or anything. I'm not an animal, you know. We just exchanged words.

As you will see on my resume, I have taught grades three, four and six. I would be open to a position in any elementary classroom, but prefer grade three or four. The younger ones are too noisy and the older ones have gone bonkers. I've always wondered what kind of crazy fool teaches the little pests once they get to junior high school. Ten of my 12 teaching years have been in third and fourth grades, and I feel a special relationship with children at this developmental stage. The rest of them I can live without.

My work record has been excellent, and my references will all attest to my professional attitude. Of course I left off the one reference who would say otherwise, but he was a jerk and I don't need him ruining my job chances.

Please take the time to look over the materials I've enclosed, and consider whether I would be a good addition to the 2802 teaching team.

I hope you can find the time to contact me to schedule a meeting at your convience. I'd rather do it at my convience, of course, but I'm not going to push my luck this early. I can be in Slowriver on a day's notice and would enjoy discussing your needs and my goals. I think I'll wear my blue suit, it really highlights my eyes nicely. You'll probably be quite smitten with me. I look forward to hearing from you. I'll just die if I don't. If you won t hire me. I'll have to sell flowers on the street corner or something.

Sincerely
Kilroy Tanker

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2. This correspondence needs some major editing. Some sections will be removed.

> To remove text with the open-apple D command follow these steps:
>
> 1. Use an arrow key to position the cursor on the first letter you want to erase.
>
> 2. Press open-apple D. The "squares" that next appear on the screen represent where the RETURN key has been pressed.
>
> 3. Use an arrow key to HIGHLIGHT exactly what you want erased.
>
> 4. Then press RETURN.
>
> 5. Correct capitalization and necessary spacing after editing each section.

3. Now use the open-apple D command, as outlined above, to make the following corrections:

    1. Erase the line To Whom It May Concern: and the blank line below it.

    2. In the first paragraph erase everything from "She thinks the move" through "and she won."

    3. Delete the entire second paragraph "When I say we . . ."

    4. Delete extra RETURNS so there is only a single blank line above the paragraph "As you will see . . ."

    5. In the second paragraph erase the sentences that begin: "The younger ones are too noisy . . .", "I've always wondered . . ." and "The rest of them . . . ."

    6. In the third paragraph delete the sentence "Of course."

    7. Delete the Returns to combine the third and fourth paragraphs. "My work record" and "Please take the time" should now be one paragraph.

    8. In the last paragraph, erase the sentences that begin "I'd rather do it at. . .", "I think I'll wear . . ." and "You'll probably be quite smitten. . ." And delete the last two sentences beginning "I'll just die . . . "

    9. Erase Kilroy Tanker and replace with your name(s).

       (HINT: Place the cursor on the letter K and press open-apple Y -- it will erase everything to the end of the line).

    10. Use open-apple Y again to replace Ms. Carp: with another name.

    11. Use open-apple S to save all the revisions you have made to this HOW TO EDIT file.

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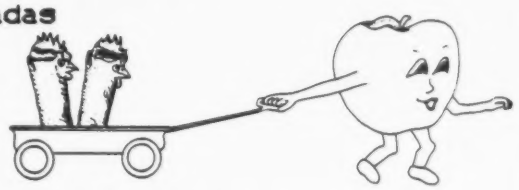
PART 1 : INSTRUCTIONS FOR ACTIVITY #5-A

1. Use the DOWN ARROW key to bring ACTIVITY #5 onto the screen:

ACTIVITY #5-A

MOVING BLOCKS OF TEXT

Avocado
Hot chocolate
Chicken enchiladas
Fruitcake
Fruit salad
Beans, refried
Beef tostada
Bread
Turkey tamales
Zucchini with corn & peppers
Nachos
Pineapple
Pudding, chocolate



2. The food list on the screen needs to be arranged in alphabetical order. Move individual or blocks of foods to make corrections.

   1. Place the cursor on the first character of Chicken enchiladas. We will move this food under Avocado.

   2. Press open-apple M (for MOVE).

   3. Select : within document press RETURN
      Note that when you press RETURN the screen appears in the "zoomed-in" format -- the RETURN "blots" show.

   4. Use an ARROW KEY to move the cursor to the end of the word "Chicken enchiladas."

   5. BE SURE TO HIGHLIGHT THE RETURN "BLOT" -- it must go with the move. If it stays, it will create a blank space in your list.

   6. Press RETURN.

   7. Move the cursor to where you want to move this food item. In this case, we will put the cursor right on TOP of the H of Hot chocolate.

   8. Press RETURN. Your list should read: Avocado
      Chicken enchiladas
      Hot chocolate

   9. Continue using the open-apple M command to rearrange this food list until it is in order.

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PART 2 : INSTRUCTIONS FOR ACTIVITY #5-B

1. Use the up arrow key to bring the "Ms. Carp" letter back to the screen:

555 Sunnyside Street
Fastriver, OR 98765

School District 280Z
Ms. Katherine Carp, Principal
123 Fourth St.
Slowriver, OR 91011
April 1, 1986

Dear Ms. Carp:

I am a teacher with 12 years of experience in the elementary classroom. My wife has landed a new job with SunTech Corp and this summer I'll be moving to Slowriver. I have therefore enclosed my resume with this letter and am seeking a position with School District 280Z.

Try the next three moves:

2. Move the row that used to say "Ms. Katherine Carp, Principal" above "School District 280Z."

3. Use the open-apple M command to move April 1, 1986 underneath Fastriver, OR 98765 -- which is not as easy as you might expect:

   1. Move the cursor to the blank line under "Fastriver, OR 98765.

   2. Tap the SPACE BAR until the CURSOR is positioned on that blank line under the "F " of "Fastriver."

   3. Have the zoom on so you can view all RETURN blots. Press RETURN. A RETURN blot will remain on the line.

   4. Next use an ARROW key to position the cursor on the "A" of "April".

   5. Use the open-apple M command to move this date to the RETURN blot you left on the line under "Fastriver."

4. Use open-apple M to rearrange the sentence "My wife has landed a new job with SunTech Corp and this summer I'll be moving to Slowriver." to read "This summer I'll be moving to Slowriver,-where my wife has landed a new job with SunTech Corp."

5. Adjust for capitalization and spacing.

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PART 1 : INSTRUCTIONS FOR ACTIVITY #6

1. Use the down arrow key to bring ACTIVITY #6 onto the screen:

> ACTIVITY #6
>
> USING OPEN-APPLE R TO EXCHANGE TEXT
>
> And now for sports . . . .
>
> The Walla Walla Wildcats beat the Plainsville Pirates Friday night, after beating the previously unbeaten Bolder Blazers in a good game Thursday night, at the NORTHSIDE TOURNAMENT. The Walla Walla Wildcats used a fast break and good defense in the first quarter to upset the Plainsville Pirates. As play continued, forward Freddie "Fastbreak" Fielding dribbled down and around the court scoring the final basket beating the halftime buzzer.
>
> In the second half the Plainsville Pirates caught up, with good offensive rebounding and heads-up play, but the Walla Walla Wildcats beat the odds and regained the lead with outside shooting, winning 78-72.
>
> The Walla Walla Wildcats continue with tournament play tommorow. The tournament is expected to draw over 5,000 spectators when the Wildcats meet the Brookside Beatnicks in the championship game Saturday night. NORTHSIDE TOURNAMENT sponsors are very pleased with the results of this year's tourney.

2. Next we will use the open-apple R command (for FIND and REPLACE) to quickly change this sports report.

3. Change Plainsville Pirates to Bucs.
   Follow these instructions:

   1. Move the cursor to the beginning (top) of this sports report.

   2. Press open-apple R (for REPLACE).

   3. Note the questions at the bottom of the screen.

   4. Select : TEXT press RETURN

   5. for "Replace what?" type : Plainsville Pirates
      Press RETURN.

   6. For "Replace with what?" type : Bucs press RETURN

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7. Select : ONE AT A TIME press RETURN

   NOTE: AppleWorks will highlight the first occurrence of old information , e.g., "Plainsville Pirates".

8. Select : YES. Note that the replacement has occurred.

9. For "Find next occurrence?" select : YES

10. Continue answering YES until all Plainsville Pirates have been replaced.

4. Change good to fantastic:

   1. Move the cursor to the beginning of the sports report.
   2. Press open-apple R.
   3. Select: TEXT press RETURN

   4. For "Replace What?" type : good press RETURN
   5. Press open-apple Y to delete any remaining characters.
   6. Press RETURN.

   7. For "Replace with what?" type: fantastic press RETURN

   8. Select : ALL press RETURN
      NOTE: AppleWorks will automatically replace all the occurrences of "good" with "fantastic." Did it work?

5. Change tournament to competition:

   1. Again move to the top of this report.

   2. Select : CASE SENSITIVE TEXT
      NOTE: AppleWorks will display "GOOD" in upper case, even though you typed it in lower case.

   3. For "Replace What?" type: tournament
      (in lower case) press RETURN

   4. For "Replace with what?" type: competition RETURN

   5. Select : ONE AT A TIME press RETURN

   6. Go through the report and change every occurrence.

   7. There should be two TOURNAMENTS left in the script? Why?

6. Change Walla Walla Wildcats to Cats

   1. Leave the first occurrence of Walla Walla Wildcats. Change all others.

7. Change beat to crush

   1. You decide how to do it . . .
   2. Check each occurrence and make appropriate changes.
   3. Check for accuracy (e.g., no "Crushnicks").
   4. Save this revised file.

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activity 7 WORD PROCESSING A "CLASS SURVEY" QUESTIONNAIRE

In this exercise you will:

* use the AppleWorks word processor to create (type) a questionnaire form;
* make a copy of this form for your partner;
* store a copy of the blank form (a "template") on a data disk;
* have each partner complete their questionnaire at the computer;
* store copies of the completed forms on a data disk, and
* print each of the completed forms.

Instructions for items one, two and three are in this "Word Processor" section. Instructions for items four, five and six will be continued in part 2: "Printer Options."

PART 1 : CREATING A WORD PROCESSOR FILE

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 3. Word Processor — press RETURN
4. Select : 1. From scratch — press RETURN
5. For filename type : CLASS SURVEY — press RETURN

PART 2 : ENTERING TEXT

1. Refer to the sample "CLASS SURVEY" on the next page as a guide.

> The "squares" at the beginning of blank lines and at end of some lines represent the RETURN blots. With a word processor you will only need to press the RETURN key when you:
>
> 1. want to stop typing before the end of a line, or
> 2. want a blank line.

2. Set the CAPS LOCK key for upper case.

> NOTE: Even with the CAPS LOCK key down, you will still need to use the SHIFT key to get some characters.

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3. Before beginning to type, read PART 3: SETTING TABS.

4. As you type, follow the instructions in PART 4 for using boldface and underline commands.

5. Make sure you are using the INSERT CURSOR (the blinking line), not the OVERSTRIKE CURSOR (the blinking rectangle).

CLASS SURVEY

LAST NAME : FIRST NAME :

STREET ADDRESS :

CITY, STATE:

PHONE (HOME) : PHONE (SCHOOL) :

SCHOOL : DISTRICT:

GRADE LEVEL :

MAJOR SUBJECTS YOU TEACH :

DO YOU USE A COMPUTER IN YOUR CLASSROOM OR WORKSETTING?

HOW? :

IN YOUR OPINION, WHAT IS THE MOST IMPRESSIVE APPLEWORKS FEATURE WE HAVE EXAMINED? :

FOR WHICH APPLEWORKS FEATURES COULD YOU USE SOME ASSISTANCE?:

DESCRIBE THE MAIN THING(S) YOU HOPE TO GAIN FROM THIS COURSE:

PART 3 : SETTING TABS

Next we will set some tab stops. The preset Tab settings are located at the top of the screen with slashes every six spaces:

=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|=====|

1. Press open-apple T (for TABS).
   Note the bottom of the screen.

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2. Type : R (to Remove all)
   Note the top of the screen. All TAB stops have been removed.

3. Move the cursor to column 5. Use the column indicator in the bottom right-hand corner of the screen.

4. Type : S (to Set)

5. Note the top of the screen. A TAB stop has been "set."

6. Move the cursor to column 35 and again type : S.

7. Press ESC to return to the REVIEW/ADD/CHANGE screen.

PART 4 : SETTING BOLDFACE AND UNDERLINE COMMANDS

1. Press open-apple Z (for ZOOM) to view the RETURN blots.

2. Begin by typing the title "CLASS SURVEY." To have this title printed in boldface type:

   1. Place the cursor where you want to type.

   2. Hold down the CONTROL key and press the letter B.

   3. Note a caret symbol (^) on the screen.

   4. Type : CLASS SURVEY

   5. Press the CONTROL and B keys again.

   6. Move the cursor so it sits on the first caret symbol. Read the bottom of the screen: A message should appear whenever the cursor is on a caret (e.g., Boldface Begin, Boldface End).

3. Move the cursor to the next line. Type the titles:

   LAST NAME :

   STREET ADDRESS :

   CITY, STATE :

   PHONE (HOME) :

   SCHOOL :

   GRADE LEVEL :

   MAJOR SUBJECTS YOU TEACH :

4. Use the TAB key when ready to type:

   FIRST NAME :
   PHONE (SCHOOL) :
   DISTRICT :

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5. For the sentence "DO YOU USE A COMPUTER IN YOUR CLASSROOM OR WORKSETTING?" use the control B printer option so CLASSROOM and WORKSETTING will print in boldface type.

6. As you type the next two sentences, press the CONTROL key and the L before and after typing the word APPLEWORKS. When these words are printed, they will be underlined.

7. When typing the word "MAIN" in the last sentence, type CONTROL B and CONTROL L, before and after this word.

8. Place the cursor on all four carets to make sure Boldface Begin and End and Underline Begin and End appear at the bottom of the screen.

PART 5 : MAKING A COPY FOR YOUR PARTNER

You should now be at the bottom of your questionnaire. AppleWorks provides a "ruler" allowing you to quickly move the cursor through the file.

1. Rather than use the UP ARROW key to return to the top of this file, press open-apple 1.

   Next we will make a copy of this form for you partner and place it below the text you just typed.

2. Press open-apple C (to COPY).

3. Select : within document press RETURN

4. Use the DOWN ARROW key, and highlight this entire form. Note the instructions at the bottom of the screen.

5. Press RETURN when the entire text has been highlighted.

6. Again use the DOWN ARROW key to move the cursor to the last line of this file (the cursor will not move down any further.)

7. Press RETURN.

8. To see both copies of this CLASS SURVEY use either the DOWN ARROW key, or the AppleWorks RULER.

9. The RULER moves the cursor proportionately through the file, using numbers 1 through 9:

   * Open-apple 9 will take you to the bottom of the file.

   * Open-apple 5 about midway.

10. We will continue to work on this word processed file in the "Printer Option" section. Press open-apple S.

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Open-Apple Keystrokes for Word Processor

Copy	- C	Copy text
Delete	- D	Delete text
Edit (Cursor Switch)	- E	Change from insert to overstrike cursor and back
Find	- F	Find text, page or marker
Hard Copy	- H	Print current screen display
Calculate	- K	Calculate where pages will break
Move	- M	Move text
Name	- N	Change the name of a file
Options (Printing)	- O	Display printing options menu
Print	- P	Print a file
Quick Change	- Q	Work with a different file on the desktop
Replace	- R	Replace text
Save	- S	Save the file to disk
Tab	- T	Set tabs
Clear	- Y	Clear (delete) to end of line
Zoom	- Z	Display format settings
Ruler	- 1 : - 9	Move to beginning (1), end (9), or elsewhere proportionally (2-8) in a file
Help	- ?	Display help screen
Cursor Move	- – or - –	Move cursor one word to the right or left
Cursor Move	- ↑ or - ↓	Scroll one full screen (vertically)

ARTICLES ON WORD PROCESSOR APPLICATIONS

The fact that the microcomputer and its word processing capabilities have become an exciting tool for those who teach writing is evidenced by the fact that the technique has been drawing so much attention from publishers, software developers, and the people who are using word processing in their work. What I like about Peggy O'Brien's article describing her classroom experiences with word processing is her emphasis on the attitudinal changes she has discovered in her less-than-capable students and her sensitivity to the problems of writers. Moreover, I like the way she places her emphasis on becoming a real writer and not simply an exercise-writing drudge.

Using Microcomputers in the Writing Class

by
Peggy O'Brien

Reprinted from The Computing Teacher, May 1984, Vol. 11 No. 9.

My own experience as a writer three years ago made me suspect that if my students could be given access to a good word processor, there would be a significant improvement in their writing skills. They would enjoy writing and would want to write more, and in writing more, their work would develop. Because writing skills are crucially important to so many other subjects, a change here in adolescence could have a ripple effect on a large part of a young person's future learning. What happened when I brought the computer into the English class was not exactly what I would have predicted.

What happened was that those students who already wrote well, and who had found their own "voice," loved writing with the computer, and quickly learned to use it. Some composed at the keyboard, some typed in poetry and other pieces, and printed out beautiful, crisp, professional-looking texts. Competition to write at the computer was fierce. This was what I had expected.

What I didn't expect was that some of the weakest students in the class were being unusually insistent about having their turn at writing with the computer. And much to my surprise and delight, I began to notice a remarkable change in these students. Where there had been negativity, unreachability and a disturbing lack of purpose, I began to notice signs of competence and growth. Consider the scenario, and the actors.

In my regular English class there were students who had to struggle to finish even one paragraph of writing in a forty-minute period. These were the ones who scrunched up their writing so tightly that it was illegible. It was almost impossible to disentangle the individual words, but if you persevered, you found that such poor handwriting hid abysmal spelling, nonexistent punctuation, erratic use of lower and upper case letters, and general incoherence. And these were the ones who were jostling for a chance to write at the computer. Why?

Was it that, seated at the computer with the keyboard under their control, they felt powerful for perhaps the first time in their lives? I speculated that they knew they were working with a machine which would be significant in their future. Gaining competence here would be important to them—they were not simply working for points. They would discover that the result of their labor was no longer a mangled scrap of illegible writing; that they could easily change their words as often as they liked and just as easily print out a variety of neat, clean copies of their writing; that this machine would not punish their lack of fine coordination, and was incapable of holding grudges over past mistakes, or of losing faith

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in their ability to learn. Somewhere along the way, these students sensed that this was a machine which could help them redeem their past academic failures.

What was there in this interaction between person and machine which could account for these gratuitous side-effects at many different levels of the writing process? One answer might be that when such students gaze steadfastly for a long time at the perfectly-shaped letters on the screen, these correct shapes are imprinted in their consciousness. In like manner, spaces between the words become real entities, which they put in there by pressing a plastic key, just as they do for any other character. They see and hold and read (and distribute with unaccustomed pride) the neatly formatted results yielded by the printer at the touch of a button.

Perhaps another answer has something to do with the fact that work at the computer invokes its own discipline. If almost perfect results come within the range of possibility, goals are extended to include that possibility. What could be more enticing than perfection? Or maybe it is because the computer seems so infallible—it never gets tired or crotchety. And one of its biggest plusses from a teacher's point of view is that there can be no psychological manipulation with this machine. Weak students, who may have learned many ways of sabotaging the efforts of well-intentioned teachers, learn that this transaction is with a willing, but non-indulgent, piece of hardware. Yes, the computer does what you instruct it to do every time, and it does it fast, but it neither forgives nor forgets! There's no fooling around. Whatever the dynamics are behind these important attitudinal changes, I believe there are some concrete reasons for strongly supporting the use of the microcomputer and word processing in the teaching of writing.

Each "real" writer develops a sequence of composing, shaping and editing that is peculiar to each piece of work and very personal. These steps, and the way they overlap, have usually evolved in a very individual way. These very personal composing and editing strategies don't change when a person starts using a word processor, perhaps because using the computer does not seem to change the way each writer's mind works. (At least, not initially!) But part of the fascination of writing with the computer is that tasks which were once dreaded by a writer, for instance, the radical reshaping and editing of a long text involving cut-and-paste techniques, suddenly become enjoyable.

Because writing is a process of discovery and problem solving, ideas on paper may go through many changes before writers will accept them as the true expression of their thoughts. Writing with the computer simply speeds up the mechanical parts of this need to write and rewrite. Storage and retrieval of work is easier. The many versions of a work in transition can be stored on disk, either printed out for reference or not, and needed additions can be inserted into the current writing. This frees the writer to concentrate on aspects which are more subtle, and expressive of personal taste.

"Writing at a computer is qualitatively different from other methods of writing. Your words up there on the screen become separated from you, and begin to have their own, separate existence. Such distancing from a work in progress is sought by every artist, and is a valuable part of the creative process."

Right from the start, writers find to their surprise that when they "brainstorm" at the keyboard, the blinking cursor seems to beckon them on, to draw them into the composing process. It prompts them to continue with one more sentence, and then another. At the beginning, the whole process is infinitely more inviting than sitting down at a typewriter. It grows progressively more absorbing as the piece develops.

Writing at a computer is qualitatively different from other methods of writing. Your words up there on the screen become separated from you, and begin to have their own, separate existence. Such distancing from a work in progress is sought by every artist, and is a valuable part of the creative process. Painters, for instance, will walk away from a painting, turn their back on it, and then hold up a mirror and, trying to pretend they have never seen it before, look at the image of the painting on the surface of the mirror. For the writer, the versions of text on the monitor or printer make possible a more objective reading of the text.

There is even more to this tool than that. A good word processor opens up a range of choices to the writer. Now that such chores as cut-and-paste are done so easily, the writer can spend more energy considering the form (or format). And since form and content are inextricably linked, the effect of work processing on the process of writing reaches back to that very first stirring of the impulse to write. An awareness of this range of choices available at every stage of the writing process allows and indeed encourages the writer to experiment with form and content until the piece utterly satisfies its creator.

Depending on the software and the hardware being used, the writer can instruct the printer to produce the text in condensed italic, or boldface all headings. At will, a given text can be expanded to six pages, or reduced to one page.The writer can take into consideration at all stages the particular flavor of a piece, or the potential audience.

My hope was that teaching students to write with a microcomputer would bring about a significant shift in their attitude to writing. Events have borne out the truth of this intuition. I am sufficiently convinced of its value to want to continue, and to increase the amount of exposure for my students. My persistent cry is, "Please give us more computers!"

END■

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Warming to the Wonders of the Word Processor:

An English Teacher's Introduction to the Computer

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by
Alyce Hunt Pollitt

This is not just another article written by a "computer person," as my students affectionately label those persons who spend every unstructured moment at school glued to the monitor and carry their disk cases with them at all times. I was a dyed-in-the-wool, traditional English teacher who firmly believed that computers were terrific toys for kids to play games on and marvelous machines for people in business. Such instruments, however, had no place in my classroom—I want to teach English, not BASIC.

But one of my best friends at school, Ted Lee, is a math teacher who has attempted to indoctrinate me since he obtained his first Apple five years ago. My mailbox has held every article ever published on the use of the computer in English class. He has favored me with every brochure any computer company released about anything language-related. My desk received detailed descriptions and instructions for programs I could use. For five years, I ignored all of this, until . . . .

My co-teacher, Ben Gill, and I wanted a new way to showcase the information our eighth-graders were researching on Elizabethan England in conjunction with our study of *Romeo and Juliet*. We opted for a newspaper format, which would give students access to all the facts as they read the paper, and in addition would give each student the opportunity to write in a different style for a different audience. We advised the "reporters" to consider the interest level and tone necessary to maintain a casual reader's attention. Many of the resulting articles proved to be marvelously creative ("Queen Mary Loses Her Head Over Religion" or "Kepler and Galileo Going Around in Circles"), some bordering on historical fiction.

Each student also created an advertisement for a product or service of that time. Many in the class enjoyed that aspect as much as anything we did all year. In addition, many students chose to produce editorials, comic strips, want ads, advice columns, crossword puzzles or editorial cartoons for extra credit.

As the students compiled and wrote and rewrote, we considered the format of the newspaper. What size should it be? 8½x11? 8½x14? Whole or folded? White? Colored? We wanted it to look authentic and decided on newsprint, only to discover that school equipment couldn't process it. We called the local printer. Yes, he could use our newsprint. If we supplied the paper, the cost of printing would only be $400!

Meanwhile, we realized that we would have to type all the articles. Even if we required that the articles be turned in typewritten (which would be difficult for a lot of students who hadn't yet taken a typing class), we'd get pica, elite, script and dot matrix—everything but consistency.

Striving to uphold our reputations as perfectionists, my co-teacher and I

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craved a finished product that would look professional and realistically Elizabethan, not some hodge-podge of type on a mimeo that looked like a bunch of homework sheets stapled together. The final blow came as we visualized those ragged right-hand margins. It hardly seemed worthwhile to devote such time and effort for something that wouldn't look like a real newspaper at all.

So we considered using a computer. Both of us denied any knowledge about them, but Ted Lee claimed they could perform miracles, so I took our problem to him. He sat us down in front of an *Apple Writer* program. In two days, during our free periods and after school, he gave us the equivalent of a $300 course. Then we took off on our own, desperately trying to remember commands, constantly referring to the manual, eagerly experimenting with margin widths to see what looked best, and forever forgetting to hit the escape key instead of the shift to capitalize!

We were confronted with 35 pages of 8½x14 typing for the final newspaper, but *Apple Writer* corrects mistakes so simply that we didn't even mind making a few. I even intentionally omitted an entire sentence once, just for the joy of inserting it. And not having to be constantly on the lookout for an imminent margin provides such a relief that the typing itself seems pleasurable. We could program to "center justify" all the titles and names of reporters and to "fill justify" the articles themselves; the *VersaWriter* could copy the advertisements exactly. A simple push of "NP" and the printer did all the work.

Two phenomena occurred during our project:

1) Some of our weakest English students took an intense interest in the newspaper because it was being done on the computer. Judging from past performance, a few probably would not even have bothered to research their topics or to compose their articles if it had required maneuvering the pencil (for notes and rough draft) and the pen (for final copy and revisions). When they discovered they could use a computer, however (most of them had their own), these students joyfully entered into the project. One even offered to help me type and print the paper at home—for extra credit, of course. On the due date, these students turned in a printout and a disk which contained their articles. I was dubious, but not for long. Facing the stack of articles I had to enter into the computer, I suddenly realized I didn't have to type theirs!

2) Our efforts drew the attention of other faculty, particularly the new head of the math department, Ken Janowiak. The thought of someone outside the math department using the computers so excited him that he offered to do anything to help us. And he did. When I took the computer home on weekends and reached an impasse, I knew I could call him. All the computer people at school delighted at seeing the computer being used in the English department, and they all generously assisted in that process.

Thanks to the Apple IIe, the *Apple Writer* program, the *VersaWriter* graphics pad, the printer, Ted Lee and Ken Janowiak, Ben and I created an authentic-looking newspaper of which we are quite proud. The computer curriculum development committee lauded us for integrating the computer into language arts in a distinctive way. A monthly middle school newspaper seems feasible.

We now include "Teaching the Word Processor" in our own English curriculum; every one of next year's 72 eighth graders will be exposed to the program. And next year *we* won't have to type all those articles—each student will type his or her own and submit the disk! No big stack of papers to carry around and grade. Just imagine . . . . END■

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Changing Teacher and Student Attitudes Through Word Processing

by
Adelaide Palmer, Thomas Dowd, and Katherine James

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Would you say that word processing is

- **putting the good ideas in your brain into the computer?**
- **using the computer for something other than shooting down aliens?**
- **changing a paragraph without doing the whole thing over again?**
- **helping you become a better reader, speller and editor?**
- **composing on the computer and having it come out on paper?**
- **having fun writing when you get the hang of it?**

It's all of the above and more according to survey responses from some sixth-grade classes in Bloomfield, New Jersey. Two of us have been using word processing with our students for over a year. We would like to share some of our experiences and the reactions of our students as word processing has become an integral part of our instruction.

Kay: Like so many other teachers, I found myself somewhat confused and bemused by the arrival of computers in my school several years ago. I've seen a number of educational "revolutions" come and go in my years of teaching. Probably my attitude could have been categorized as wariness about the newest "bandwagon."

In January 1983, both Tom and I had the opportunity to become involved in a pilot word processing program in the district. Something happened over the course of those first five months that caused me to become committed to a word processing application of computers. Not only committed, but so involved that when I began not showing up in the faculty room for lunch, my colleagues wondered what I was up to.

The pilot program started at the most basic level, with one Commodore PET and cassette recorder for my class of about twenty children. *Papermate*, a relatively inexpensive (under $50), but good word processing program, was provided, along with cassette tapes for the children to use to save their writing. The only printer available was housed in the central office, and as assignments were completed, tapes were sent there to get print copies made. Later that spring a printer was obtained in Tom's school through funds donated by the Home and School Association, and my school has a printer this year.

Tom: The big questions in my mind were both the workability and worth of word processing instruction, and its use in intermediate classrooms. With reading, mathematics, social studies, science, spelling, physical education, and four or five other subjects on the docket on a daily, or almost daily, basis, how in the world would word processing fit in? This was an issue I had to struggle with until I reached a resolution that worked for me. I imagine it was the same for Kay.

Kay: You're right! I began with introductory lessons for the whole class on the keyboard and commands, followed by individual follow-up under my supervision. Later on, children used the "buddy" system, where two to four students worked together in reinforcing the commands and functions while typing in sentences and short paragraphs.

As the students' computer skills and volume of composition increased, they prepared their rough drafts beforehand. The "buddy" system continued, with each student entering material into the computer with a peer-editor assisting in reading and editing.

Computer time was limited in my class to about five hours a week, so I chose to have the children use it on two days when there was small group work and students were moving in and out of the classroom for special activities.

Tom: On the other hand, I had more access time for my students, so I devised an individualized floating schedule. Students used the computer throughout the day, every day. Any curriculum material that was temporarily missed was reviewed later with me or another student. My initial concerns about the floating schedule disappeared when I found that my students were able to move in and out of instructional groups to the computer with little difficulty.

Adelaide: The program Tom and Kay have been describing started because of my interest as district reading supervisor, and that of the mathematics supervisor, Tom Hooper. The value of word processing as an important component of educational computer applications has been discussed in an ever-increasing number of articles over the past few years. For the most part, these articles were written by researchers working with small groups of students, or by those in ideal settings with access to a number of computers and desired hardware such as disk drives and printers.

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Kay: I'm not a researcher, and there certainly was no blank check from the Board of Education for equipment! You could say that Tom and I were willing to try it on a knocked-down, do-it-yourself basis. After I received the program, a brief written explanation of some basic commands, and command cue cards for the students, I was pretty well left to my own devices.

Tom: To tell the truth, I wondered why I had agreed to become involved in the first place. Initially, I spent time acquainting myself with the program. At this point I was willing, if not completely ready, to introduce word processing to my students. I knew that I would continue to learn as questions from students arose.

There is no set way to introduce students to word processing; I simply did what was comfortable for me. I later learned that Kay had used some materials from the central office that provided practice with editing, correcting misspellings, capitalization and punctuation. I preferred to plunge in with instruction geared to book review reports that I had already planned for my class. With patience and effort on both the students' and my part, things took off—poetry, book reviews, creative writing, letters to students in another school district, a holiday message . . . and then the school year ended all too quickly.

Kay: At the end of the school year we met with district supervisors to analyze the pilot. We found that we confirmed results that had been previously reported by others. What really interested us was to obtain some insight into the students' perceptions, in addition to an analysis of their writing. We put together a simple survey to gauge how students felt about what they were doing with word processing. We felt that the way they saw themselves was one of the most important things that happened. Others who are interested in teaching about the composition process and the use of computers may want to survey their students in a similar fashion.

Motivation and Attitudes

Tom: The survey showed that students overwhelmingly described themselves as "curious" and "excited" when they first used the word processor. Motivation for almost any learning activity is fairly well-established when students indicate interest in a task.

Their motivation continued the entire time. How many sixth graders rate writing as "easy" or "enjoyable"? Seventy-five percent of the students in our classes categorized the writing process this way. Along with this, all but one student thought that their writing skills had improved. Moreover, 80% wanted to continue using word processing in the future.

Whether the skills had actually improved was not formally analyzed last year, although this is being done this year. I feel these perceptions are most important for children at this age. Most of my students thought that they were getting better in their writing assignments and that there was enjoyment in writing. All the educational axioms about experiencing success in learning reinforcing the desire to continue are tied up in these reactions.

Word Processing Techniques

Kay: None of my students had any background in using a typewriter or computer keyboard prior to their introduction to the program; they learned the keyboard as they worked on their writing assignments. As a result of their suggestions, a high school computer aide wrote a program to help develop keyboarding skills that was used this year. Despite not knowing how to type when they began, 75% rated typing as "enjoyable" or "easy."

Learning the necessary commands is essential to experiencing success with word processing. Laminated cue cards were provided, but as in learning to drive a car, knowing the order of the steps is critical. Once again, students responded positively to the challenge; 63% said that learning the commands was "enjoyable" or "easy."

Suggestions for Expanded Activities

Tom: The children provided an abundance of ideas on expanding the program. In addition to the usual

writing assignments, they said they would like to use word processing for:

- pen pal letters to other classes in their school or to other schools;
- holiday letters to parents to be put in attractive folders;
- student-made tests for the rest of the class; and
- reports for different subjects.

Other activities they suggested were:

- an after-school club;
- a computer news committee;
- certificates for those who work hard on program commands;
- game activities to learn commands; and
- a notebook section on computer use.

Recent Happenings

Adelaide: Looking back at the efforts of Tom and Kay last year, the school district felt it would be worthwhile to expand the program to include other teachers. Last October Tom and Kay each spent a day training the other sixth grade teachers in their respective schools.

Tom: We started them out just as we do our students, learning a few of the basic commands. And now that disk drives and printers are in our schools, we showed them the operation of those peripherals.

Kay: I'm excited about the work my class is producing this year. Of course, I know much more myself than I did last year, and we were also able to begin early in the fall this year.

Adelaide: This year we are doing a formal analysis of student writing. In the fall, sixth grade students in four schools did timed writing samples for us to score holistically. Before the end of school, the same students will write another sample. We will be able to look at the samples from classes with word processing experience and compare them to the samples of classes without such a program. The survey that Tom and Kay developed last year will also be used this year.

Tom: This year I've been involved in district computer inservice courses. One of the courses, "The Computer as a Tool," had sessions on word processing that I taught. Imagine—last year's neophyte, this year's expert!

Probably one of my students last year said it best when he expressed his explanation of word processing most succinctly as "It's a whole new world!" In our district, we most definitely want all of us—teachers and students alike—to be part of such a new world.

END■

[Adelaide Palmer, Thomas Dowd, Katherine James, Bloomfield Public Schools, Bloomfield, NJ.]

Computers in the
Teaching of English

Robert Shostak

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Welcome back to all readers and a special welcome to all of you first-timers. Don't forget that what you read in this space is written for the most part by classroom teachers working at all levels of the English/language arts curriculum. The success of this column depends on contributions from you; if you are having success with a particular program, teaching technique or hardware application, share it with all of us in 1800 words or less.

Bill Wresch, a past contributor to our column, has sent us another article describing his latest work in developing a CAI program for teaching composition. What is exciting about Bill's approach is that he has used the integrated systems approach in his program and has created a piece of courseware which is designed to assist students with all three steps of the writing process—prewriting, writing and editing—while allowing them full use of a word processor in the same package.

Integrated Computer Systems to Aid All Stages of the Writing Process

by
William Wresch

Within the past two years there have been some major developments in computer-assisted writing, but none so important as the creation of programs which integrate aids for the whole writing process: prewriting, writing and editing. One such program is *Writer's Helper*, developed here at UW-Marinette with support from the Apple Education Foundation. The program begins by giving students a choice—they can have the program present some prewriting aids, move directly to the word processor, or give an analysis of some previously written text.

Prewriting

Assuming students choose to prewrite first, here are the options presented on the screen:

1) Find a subject to write about.
2) Explore a subject.
3) Organize information about a subject.
4) Develop a single paragraph.

The choices were established based on the assumption that students come to prewriting with different needs. Let's assume a student wants help finding a subject. If the student types in a "1," the computer screen changes to show the titles of three programs designed to help students find a subject. Here's how they are listed:

1) Brainstorms
2) Lists
3) The Questioner

Why three activities? Ray and Dawn Rodrigues of New Mexico State have been saying for years that students need a variety of prewriting approaches to match their differing cognitive styles. For that reason students are given alternatives at each level of prewriting.

"Brainstorms" is a freewriting exercise which gives students a blank screen and asks them to type out whatever comes to mind. "Lists" helps students generate words or phrases about possible subjects. It gives a random response ("Wow," "That's interesting," etc.) after each idea is typed in to urge students on, and then it helps students find which idea in their list might make a good subject for writing.

"The Questioner" generates a series of questions such as, "What is your favorite day of the week?" or "What makes you proudest of your school?" The program again responds randomly to student answers with such comments as "Really?", etc.

If students already have an idea for an essay (or if they have been assigned one by their teacher), they can go directly to a series of programs to help them explore a subject. Their three choices here are presented on the screen this way:

1) Crazy Contrasts
2) The Tree
3) Three Ways of Looking

"Crazy Contrasts" has students compare a familiar subject with objects normally thought to be quite different from the original subject. For instance, if a student wants to explore a subject like "cross country skiing," the program might ask, "Why is cross country skiing like day-old meatloaf?"

"The Tree" is really a categorization exercise. It asks the student to name a subject and then asks for a list of twenty words or phrases related to that subject. To demonstrate how related ideas can be placed under a category, it graphically displays a "tree" on the screen, where the subject is the root, the categories are the major branches, and the twenty words or phrases are attached to the appropriate branches. The student is then asked to create appropriate categories for the original list of words, and a tree is created for the student's subject. This shows the student how the original subject can be broken into subtopics and what information might be placed in each topic.

"Three Ways of Looking" contains a series of questions about the student's subject in isolation, as part of a process, and as part of a network. At each point along the way the student is told the nature and purpose of the questions. The student is also able to save or print out answers to this section so they can be examined later or used to begin an essay.

In the third level of the prewriting section, students are shown how to organize their information about a subject into a five paragraph theme.

The last program in the prewriting section is designed to aid students after they have started writing and find that one or more of their paragraphs are weak. The program contains both a tutorial on basic paragraph construction, and a paragraph generator which should help a student write a more fully supported paragraph which can then be transferred to the word processor to be included in an essay the student may be working on.

Word Processing

The word processor is the second major component of *Writer's Helper*. It

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was designed with two major goals in mind: ease of use by students, and full integration with the prewriting and editing programs.

Ease of use is enhanced in two ways. A screen display keeps the major commands (insert, delete, find and replace, block, move, etc.) visible on the screen so students don't have to memorize the editing function keys. It has been designed so that students can print, save or move to editing or prewriting programs by pressing a single key.

The word processing program is further integrated with the prewriting and editing programs by allowing a student to save part or all of a text s/he is working on, load in a paragraph from a prewriting exercise and combine it automatically with the rest of the essay. In this way a student who is working on an essay and runs out of ideas after two paragraphs can save those two paragraphs, jump out of the word processor and get help from a prewriting program, save the results of the prewriting program on a disk, and then come back to the word processor and let the computer combine the earlier work and the more recent work and display both on the screen.

Editing

The editing programs are the third major section of *Writer's Helper*. They are designed to give students information about the style and development of their work in progress. If students want this information, they press a single key and the screen displays the following choices:

1) Homonym Checker
2) Readability Level
3) Sentence Graph
4) Paragraph Development
5) Outliner
6) Usage Checker

"Homonym Checker" looks through the essay for words such as "there, their and they're." "Readability Level" asks them to type in an estimate of their readers' readability level, computes the readability level of the essay, and compares the two. "Sentence Graph" graphs out the length of each sentence of the essay so students can see patterns in their writing. "Paragraph Development" counts the words in each paragraph and points out those which might be underdeveloped. "Outliner" prints out the first line of each paragraph so students can check for logical flow and transition usage. "Usage Checker" goes through the essay looking for "affect/effect" and other potential usage errors.

"The purpose of these editing programs is to give writers information about their work and to reinforce the idea that looking back to check for errors is a natural part of writing."

The purpose of these editing programs is to give writers information about their work and to reinforce the idea that looking back to check for errors is a natural part of writing.

Writer's Helper has been developed for an Apple IIe and is currently being fieldtested at a number of high schools and colleges. It will be tested in 1984 in the Arlington Heights middle schools. ■

[William Wresch, University of Wisconsin-Marinette, Marinette, WI 54143.]

[Dr. Robert Shostak, Florida International University, School of Education, Tamiami Campus, Miami, FL 33199.]

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The Computer As a Writing Tool

by
Ellen Joslin

Reprinted from The Computing Teacher, March 1986, Vol. 13 No. 6.

Ellen Joslin presents some excellent exercises for introducing the basic functions of word processors. To create a data disk of these exercises, use your word processor to type in each file and save it with the appropriate file name. You will need to make a copy of the data disk for each student.

Computers are slowly but surely being integrated into the McCulloch Middle School language arts curriculum. All Highland Park seventh graders take a one-semester course in "Computer Literacy," where they are introduced to machine usage, word processors, spreadsheets, data bases, BASIC programming, etc. Our new language arts curriculum requires our eighth graders to use the computer as a tool, so they need to be especially proficient on the word processor.

Each fall the language arts teachers allow me two class periods to introduce word processing. In order to fit it all in, I've developed a set of exercises to present the "Seven Steps to Successful Word Processing." Each student buys a disk which contains the exercises for use with our word processor. As the school year passes, they store their compositions on their own disks.

On the old theory of:

1. Tell them what you are going to teach,
2. Teach it,
3. Tell them what they have learned,

we begin by loading a file called "Seven."

Seven Steps to Successful Word Processing

1. Retrieve file
2. Delete text
3. Insert text
4. Save file
5. Print file
6. Move text
7. Composition and creation

File name: "Seven"

I run through this list, defining each of the terms briefly, then cover them thoroughly with the exercises.

Retrieval is the first and easiest skill to teach. After learning how to load a program, the class as a group loads the text file titled "Poem." The teacher explains that the students have on their disks a series of eight clues which, if correctly interpreted, will allow them to find *that which is lost.* Those who can retrieve those clues by following the appropriate directions will raise the Titanic.

Dear Friends:

I'm lost in the deep, far from light
But do not weep! Put it right.

I'll give you clues to find my site.
Write them down—make sure they're right.

Take my measure, use your mind,
And a treasure you will find!!

Signed,
??????

File name: "Poem"

CLUE 1:
Write the following letters on a piece of paper. They are clues to help you find that which is lost!

M I D

Now retrieve CLUE 2

File name: "CLUE 1"

CLUE 2:
Write the following letters on a piece of paper. They are clues to help you find that which is lost!

E N I

Retrieve CLUE 3

File name: "CLUE 2"

CLUE 3:
Write the following clue on a piece of paper. It will help you find that which is lost!

THE ? IS AN "A."

Retrieve CLUE 4

File name: "CLUE 3"

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2.5
2.2
2.0
2.8
3.2
3.6
4.0
100 mm
1.0
1.1
1.25
1.4
1.6
1.8
2.5
2.2
2.0
2.8
3.2
3.6
4.0
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz1234567890
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890
1.0 mm
1.5 mm
2.0 mm
A5
PG

CLUE 4:
Write the following letters on a piece of paper. They are clues to help you find that which is lost!

I E A L E

Retrieve CLUE 5

File name: "CLUE 4"

CLUE 5:
On a piece of paper, write the sentence below. It's a clue to help you find that which is lost!

I'—/H—D———/—N/?/F—L—/C——L—D/
—IT—N——/F—N—/—E/IF/———/—A—!

Retrieve CLUE 6

File name: "CLUE 5"

CLUE 6:
Write the following letters on a sheet of paper. They are the clues to help you find that which is lost!

T A I C I D M Y

Retrieve CLUE 7

File name: "CLUE 6"

CLUE 7:
Write the following letters on a piece of paper. They are clues to help you find that which is lost!

O U C N

Retrieve CLUE 8

File name: "CLUE 7"

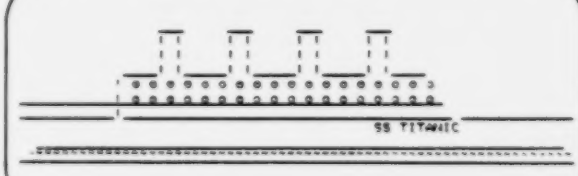
CLUE 8:
THIS IS YOUR LAST CLUE!

Put the letters you have written in the blank spaces in the sentence from CLUE 5. Be sure to put them in the order you uncovered them.

CLUE 3 is a special clue.

GOOD LUCK!

File name: "CLUE 8"



After 75 years at the bottom of the sea, the Titanic has been found! File name: (Use the clues to find out!)

The primary purpose of a word processor is to produce and edit text, which involves deletions and insertions. Since there is no penalty for revising on a word processor (no erasures, cross-outs or recopying), students are more willing to rewrite and perfect their work. To teach deletion techniques, direct the student to load "Max."

Direction: Move the cursor to the homonyms in this story. Delete the incorrect one. Only the homonym that fits the story should remain.

Max—the RODE/ROAD Warrior

In the DAZE/DAYS after the GREAT/GRATE war when civilization DYED/DIED and no one defended the WEEK/WEAK, THEIR/THERE came a REAL/REEL man. His name was Max. Max was not what he SEAMED/SEEMED to BEE/BE. As a man and BUOY/BOY, he followed the warrior WAY/WEIGH.

THEY'RE/THERE will never again be a hero such as he. THROUGH/THREW war and pestilence, along the desert RODES/ROADS, he fought the savages and ONE/WON. Each TAIL/TALE of daring, each FEET/FEAT of strength was told where good men MEAT/MEET.

Who'll RIGHT/WRITE the story of Max and his RAIN/REIGN as king of the highway? Who'll REED/READ and remember when Max defeated the barbarians?

File name: "Max"

The "Skeleton of a Story" is used to show the ease with which text can be inserted. Ideally, a printed copy of the activity (see page 19) is handed out as homework by the class-

room teacher, then the students bring it, filled out, to the computer lab ready to make their insertions. When this activity is loaded from the disk, students are sure to note that the blanks have been replaced by parentheses. This was done to make the whole story fit on one screen.

Skeleton of a Story

Here are the "bare bones" of a story. By filling in the blanks ( ) in an interesting way, you can make any kind of story you want—mysterious, funny, sad, silly—it's up to you. Be sure to choose an interesting title. When you have finished your story, save the story on your disk and then make a printed (hard) copy of your story.

****

I always knew my Aunt ( ) was a real ( ). Why, she ( ), and one day she ( ). But even I was surprised when she told us she planned to ( ). After all, she was ( ) years old, and this could be a ( ). We told her ( ) and begged her not to ( ), but nothing could ( ), and so, although we felt ( ), we watched her ( ).

( ) passed. No one heard a ( ) from Aunt ( ). We were beginning to wonder if ( ) when suddenly our aunt appeared. She had been ( ) and she seemed very ( ). ( )ly, she told us the whole ( ). It seemed that she had ( ) and ( ). Now she was ( ), and we all felt ( ). Since then, Aunt ( ) has never ( ). Instead, she spends her time ( ). What a ( ) she is!

File name: "Skeleton"

Students will want to save their versions of this story to their personal disks, and the teacher may want a printed (hard) copy for grading, so now is the time to introduce saving and printing text files. Encourage students to review their work on the computer screen and to make and save improvements before printing.

As the students print their work, you might take time to demonstrate some of the print options. Show them centering, left justification, right justification, center justification, and full justification. Printing is seductive; the story comes off the printer looking polished, and kids take pride in showing off their work.

Directions: AppleWriter II offers a way to move words and paragraphs very quickly. When the arrow in the top left corner of the screen is pointing left the words and paragraphs just deleted can be inserted in a new location. CONTROL D moves the arrow. CONTROL X moves a paragraph.

To correct the nursery rhyme below:

1. Place the cursor two spaces to the right of the word "go"
2. Type CTRL D
3. Type CTRL X
4. Move the cursor two spaces to the right of the word "went"
5. Type CTRL D
6. Type CTRL X
7. Put the rest of the lines of the rhyme in correct order.

Reminder: Because each line of a poem is followed by a RETURN, the computer treats each line as a paragraph. To move a single word type CTRL W.

The lamb was sure to go!
Its fleece was white as snow.
Mary had a little lamb.
Everywhere that Mary went,

Put the rhymes below in correct order.

To fetch a pail of water.
And Jill came tumbling after.
Jack and Jill went up the hill
Jack fell down and broke his crown,

Along came a spider and sat down beside her,
Eating her curds and whey.
And frightened Miss Muffet away.
Little Miss Muffet sat on a Tuffet,

File name: "Rhymes"

Our final practice exercise shows the students how to move text. There is something exciting about pressing a key and watching a paragraph disappear. It's *aha!* time when the paragraph reappears in another location. Everyone knows nursery rhymes (if they don't, we write them on the blackboard), and it is fun sorting mixed-up ones into correct order.

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MEGAWORKS

Megahaus Corp., 5703 Oberlin Drive, San Diego, CA; 619/450-1230

Subject: Spelling Checker and Mail Merge

Cost: $125

Hardware Required: Apple IIc, IIe with 128K; single disk drive.

SENSIBLE SPELLER WITH ProDOS (Version 1P)

Sensible Software, Inc., 210 South Woodward, Suite 229, Birmingham, MI; 313/258-5566

Subject: Spelling Checker

Cost: $125

Hardware Required: Apple II, II+, IIe, IIc or III with 48K; single (also 3½) or double disk drive.

SPELLWORKS

Advanced Logic Systems, Inc., 1195 East Arques Ave., Sunnyvale, CA; 408/730-0307

Subject: Spelling Checker and Mail Merge

Cost: $49.95

Hardware Required: Apple IIc, IIe with 128K; two disk drives.

Reviewed by: Bill Campbell, Doctoral Student, University of Nevada, Las Vegas; Doris Carey, Assistant Professor of Education, University of Nevada, Las Vegas

The spelling checker has become a good tool and learning device in the modern classroom. It is love at first sight for the English teacher: Students learn where their mistakes are occurring, they understand limitations of certain dictionaries and, most importantly, their attention is drawn to repeated mistakes. Spelling checkers also increase the confidence level of both student and teacher. Students are more likely to experiment with vocabulary. Teachers (and most users) appreciate the easy elimination of bothersome typos, which sometimes go undetected otherwise.

Spelling checkers are designed to help locate errors in word processed text. A spelling checker works by matching the list of words in a user's text file with its own word list, its "dictionary," then flagging each word in the file that has no match in the dictionary. Naturally, spellers are as diverse as word processing programs. We selected *Megaworks, Sensible Speller* and *Spellworks* mainly because all three work with *AppleWorks*. *Megaworks* and *Spellworks* are specifically designed to operate with *AppleWorks*, while *Sensible Speller* offers another version, *Sensible Speller IV*, that is geared to *Applewriter, Apple CP/M, PFS Write, SuperText* and *WordHandler*.

Megaworks and *Spellworks* are also mail-merge programs. Unfortunately, mail merging appears to be their primary purpose, because *Megaworks* devotes only eight out of its 50 pages of documentation to the spelling function (however, one 65-word sample file is provided on an "example disk"), and *Spellworks* devotes fewer than seven pages out of 35.

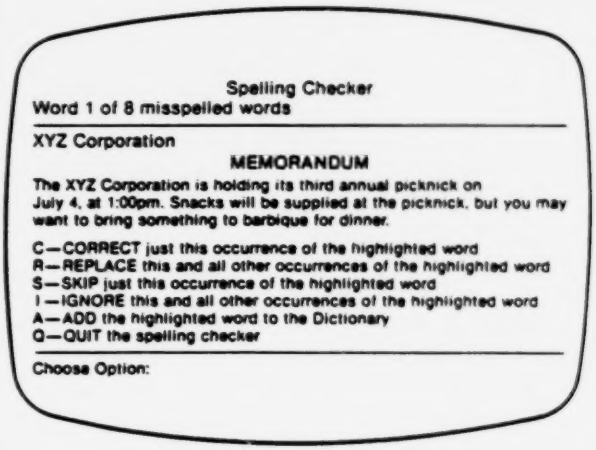
Nonetheless, the three spellers were examined for:

1. The method of reporting non-matched words and number of words, and the size of the dictionary (the inclusion of proper names, numbers and abbreviations).
2. The availability of a custom (personalized) dictionary option.
3. An option to search the dictionary for suggested spellings.
4. The documentation.

We also conducted a simple speed test using the same text file for each, but we felt speed was not as important as the quality of the four features listed above.

In a teaching environment it is important that a speller produce a printed list of words not found in the dictionary after a checking operation. Even more ideal would be a list that indicates the corrected word alongside the replaced word. And for those checkers that allow a custom dictionary, it would be a help if each student could maintain a separate, individual dictionary.

A spelling checker in an educational environment is an important investment. Putting financial considerations aside (is that possible?), a potential purchase must be examined for not only what it will do, but also what it will *not* do.


Spelling Checker
Word 1 of 8 misspelled words
XYZ Corporation
MEMORANDUM
The XYZ Corporation is holding its third annual picknick on July 4, at 1:00pm. Snacks will be supplied at the picknick, but you may want to bring something to barbique for dinner.
C—CORRECT just this occurrance of the highlighted word
R—REPLACE this and all other occurrences of the highlighted word
S—SKIP just this occurrence of the highlighted word
I—IGNORE this and all other occurrences of the highlighted word
A—ADD the highlighted word to the Dictionary
Q—QUIT the spelling checker
Choose Option:

Megaworks Correction Screen

Megaworks allows the user to add up to 10,000 words to its 50,000-word dictionary. Moreover, the main dictionary can be

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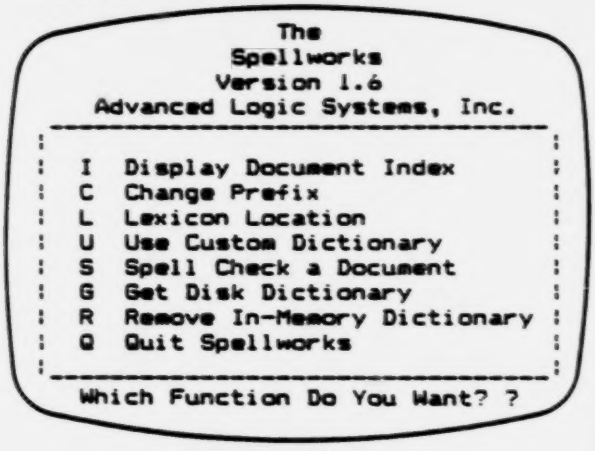
copied for various unique applications and additions. The biggest drawbacks of *Megaworks* are that it will not permit a search, or even a peek into its dictionary, and it does not provide a list of words found or corrected. Further, should the user mistakenly (or deliberately) add a word to the dictionary, it is permanent; there is no delete option. Numbers, abbreviations and proper names are not part of the dictionary, which is not surprising since *Megaworks* is the smallest of the three checkers we examined.

Megaworks would work well in the classroom except for two major problems. The main dictionary can be added to, but not deleted from, permitting the teacher or student no monitoring of changes. And since *Megaworks* does not allow the user to view the dictionary, students would have to rely on a paper version of a dictionary to look up suspect words. *Megaworks* does not provide a paper version.



Spellworks Main Menu

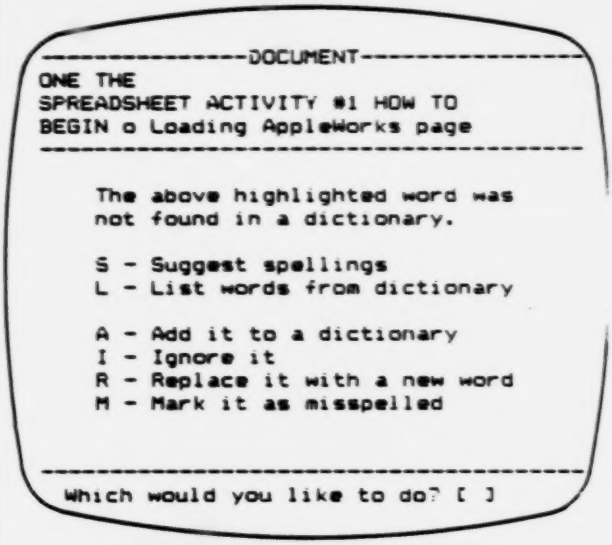
Among the three spelling checkers, *Spellworks* has the largest dictionary (90,000 words), but it does not include numbers or proper names. It does, however, read hyphenated words as one word, and they are flagged during the checking process. The weaknesses of *Spellworks* are:

1. The documentation does little more than describe Main Menu options;
2. The Main Menu choices are either ambiguous or incomprehensible (For example, what is a Lexicon Location? Elsewhere "lexicon" is replaced by "dictionary");
3. Volume and pathnames (disk name and complete file name) must be memorized in order to access a file to be checked;
4. Mismatched words are written to an *AppleWorks* file, so in order to change the original document, the suspect words must be run individually through a search and replace routine, not in *SpellWorks* but in *AppleWorks;* and
5. There are no error messages to let the user know why a certain function is not proceeding according to the desired plan. Instead, *Spellworks,* without ceremony, dumps the operator back to the Main Menu.

On the good side, *SpellWorks* does provide a list of words that the user can manipulate, providing the user is fluent in search and replace techniques. This checker also allows the creation of a custom word list as an *AppleWorks* file (not to exceed 2,000 words). This word list is easily added as a text file with only a space necessary to separate words.

Basically, *Spellworks* is not for beginners: It is *not* user friendly. The actual transition from screen to screen is easy going, but we feel that even the experienced operator would find this program awkward and time consuming to use.

The least expensive, *Spellworks* is the only speller of the three whose price is coming down out of the clouds. We feel that a support program such as a spelling checker should not be competing in price with word processors. We overheard a teacher remark the other day that if he had bought all the lace and embellishments available for his word processor, it would have cost almost $500. Luckily, he opted for a regular dictionary instead.


DOCUMENT
ONE THE
SPREADSHEET ACTIVITY #1 HOW TO
BEGIN o Loading AppleWorks page
The above highlighted word was
not found in a dictionary.
S - Suggest spellings
L - List words from dictionary
A - Add it to a dictionary
I - Ignore it
R - Replace it with a new word
M - Mark it as misspelled
Which would you like to do? [ ]

Sensible Speller Correction Screen

Our favorite checker reviewed is *Sensible Speller.* Its best feature is that it provides suggested spellings for the selected words on request by searching its dictionary for up to eight words "closest" to the mismatched word. It also reports the frequency of words used, and a custom dictionary can be made to include specialized words. This limitless custom dictionary is assembled in a text file, one word after another with a space separating each. *Sensible*'s resident dictionary contains 80,000 words, and the search feature of this speller is comprehensive and easy to use. *Sensible*'s documentation is the most thorough of the three and gently walks the user through all the features showing facsimiles of the screens encountered along the way.

Sensible's dictionary (Random House) includes many proper names (including countries) and abbreviations. The dictionary has been split into two parts, one on the front and one on the back of the disk. The first 43,000 words, side one, is called the Main Dictionary and contains the most often used words. The Supplemental Dictionary, on the back, contains less frequently used words and can be used to verify documents that have a large number of unrecognized words.

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Sensible ignores hyphens and treats hyphenated words as separate words, which cuts down on error checking time but does not give the user an opportunity to validate the actual use of a hyphenated word or phrase.

We lined up the panting nags at the starting gate, ready to run the 7K course, and the race was on! Around and around the fillies went. *Spellworks* pranced across the finish line first (97 seconds). *Megaworks* huffed and puffed across second (120 seconds). *Sensible Speller*, the one we had our money on, nonchalantly came in last (165 seconds). But who won the race? *Spellworks* was disqualified because words identified as misspelled could not be corrected without returning to *AppleWorks* and making corrections through the Find and Replace command. *Megaworks* was penalized because we had no access to its dictionary. The third nag, the slowest, *Sensible Speller* could have been the winner if it weren't necessary to pass the text through the two separate dictionaries. Considering the programs' differences, a fair handicap was out of the question.

No doubt *Spellworks* is the spelling checker schools are buying because of its price, but teacher who end up with *Spellworks* will be disappointed when they find out what it cannot do.

Megaworks is awkward because it forbids any peeking into its dictionary. It should not be forgotten that *Spellworks*

and *Megaworks* are primarily mailmerge programs, which will be the subject of a future review.

Sensible Speller, of the three critiqued, emerges as the speller most beneficial to the computing teacher. As previously stated, *Sensible Speller* is user friendly, allows a search of the dictionary, and provides a list of the selected words. Words can be left as is, added to a custom list, replaced or deleted by the user. However, the price of *Sensible* must be considered, and $125 is more than the price of many word processing programs. But *Sensible Speller* wins as the all-around, most functional spelling checker. Its features far outrun the other two. The only thing that makes *Sensible Speller* unsensible is the price. Of course there are other alternatives. Maybe we could have an educational software telethon? Jerry—what about *our* kids?

Publishers' Replies
SENSIBLE SPELLER
SPELLWORKS
MEGAWORKS

Reviews of these three programs appeared in last month's TCT.

Publisher's Reply—*Sensible Speller*

There are several ways to speed up the *Sensible Speller*.

The two dictionaries are prioritized—the first dictionary has 40,000 of the most commonly used words, the second dictionary has an additional 40,000 words that are used less frequently. The first dictionary can be used by itself and is adequate for many people's needs. Using just the main dictionary can trim your observed times by about 60 seconds.

The proofreading times you observed are representative when standard floppy disk drives are used. However, the *Sensible Speller*, unlike many of our competitors, can also be used with all ProDOS hard disk drives (including Corvus Omnidrives) and most memory expansion cards used as RAM disk drives. The *Sensible Speller* can operate up to twice as fast on a hard disk drive and up to three times as fast on a RAM disk drive.

Thank you for giving us the opportunity to add our comments.

Publisher's Reply— *SpellWorks*

None.

Publisher's Reply—*MegaWorks*

First, our thanks to your reviewers for their appraisal and review of our program, *MegaWorks*.

However, it should be noted that in October of 1984, when *MegaWorks* was released, there were no mailmerge or spelling checker programs designed to work with *AppleWorks*. *MegaWorks* offers these two features in one program following the *AppleWorks* file card format, which makes it a logical choice for any *AppleWorks* user. In its lifetime of nearly a year and a half, *MegaWorks* has enjoyed a huge success because of its ease of use and familiar commands. In March of this year Megahaus Corporation released *MegaWorks* version 1.1, which is compatible with hard disks such as the Apple profile or the unidisk 3.5.

Your comments regarding review of the dictionary are worth noting (from an educational point of view, this might be a slight drawback), however, *MegaWorks* does allow the user to add up to 10,000 additional words to its existing dictionary.

By examining our program using your list of four important features, comparing its overall functionalism and ease of use to *SpellWorks* and *Sensible Speller*, *MegaWorks* with a $125 suggested retail price makes it the only choice for many. (Please note Megahaus offers educational pricing for single-program or 10-pack purchases.)

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MEGAWORKS

Megahaus Corp., 5703 Oberlin Drive, San Diego, CA; ph. 619/450-1230

Subject: Mail Merge and Spelling Checker

Cost: $125

Hardware Required: Apple IIc, IIe with 128K; single disk drive; printer.

Software Required: *AppleWorks*

SPELLWORKS

Advanced Logic Systems, Inc., 1195 East Arques Ave., Sunnyvale, CA; ph. 408/730-0307.

Subject: Mail Merge and Spelling Checker

Cost: $49.95

Hardware Required: Apple IIc, IIe with 128K; two disk drives; printer.

Software Required: *AppleWorks*

HABAMERGE

Haba Systems, Inc., 6711 Valjean Ave., Van Nuys, CA 91406; ph. 818/901-8828

Subject: Mail Merge

Cost: $49.95

Hardware Required: Apple IIc, IIe with 128K; external disk drive or ProFile Hard Drive; printer.

Software Required: *AppleWorks* or *E-Z Pieces*

APPLEWORKS MAILING PROGRAM (AMP)

International Apple Core, 2278 Trade Zone Blvd., San Jose, CA; ph. 408/727-7713.

Subject: Mail Merge

Cost: $30 (IAC members price, $25)

Hardware Required: Apple IIc, IIe with 128K; one disk drive; printer.

Software Required: *AppleWorks*

Reviewed by: Bill Campbell, Doctoral Student, University of Nevada, Las Vegas, Nevada; and Jim Machinski, Curriculum Coordinator, Bishop Gorman High School, Las Vegas, Nevada.

A mail merge program is a fascinating utility used widely in business and sporadically in the private sector. With a careful evaluation of a school environment's needs, the mail merge program can be a useful utility there, too. But just what is a mail merge?

Mail merging is a sophisticated word processing operation allowing the user to take words, sentences and paragraphs of information from a data base file and merge them into specific places in a word processor file, to produce a combined, personalized document for each data base record. Many of us have already seen the results of large mailings in which a solicitation letter has been addressed personally to each one of us. No longer are we just "To Whom It May Concern."

In the classroom, a mail merge could be used to expand data base operations and concepts. For example, students could use a mail merge operation for: 1) creating letters of application for future job possibilities; 2) sending multiple mailings for primary research projects; and 3) researching future educational opportunities such as programs, scholarships, admissions and financial aid.

Outside the classroom students could also use a mail merge for mailing club newsletters, holiday notes, or advertising solicitation letters for the school newspaper or yearbook. Administrators and teachers also could find a mail merge useful in sending interim reports, letters to parents, and other routine correspondence.

Four Programs

We selected four mail merge programs specifically designed to enhance the *AppleWorks* environment: *MegaWorks, Spellworks, HabaMerge* and *AppleWorks Mailing Program (AMP)*. Two of these programs, *MegaWorks* and *Spellworks*, also include spelling checkers, which were reviewed previously (see March 1986 *The Computing Teacher*).

All four programs begin a mail merge operation in much the same way. They each require that a form letter be created in an *AppleWorks* word processor file, using special markers to indicate the information which will eventually be merged (see figure 1). All four programs use the *AppleWorks* data base for accumulating the specific information to be merged (see figure 2).

We used a one-page form letter and 20 records (of nine fields) to compare the programs. Once the form letter and the data list (data base records) were made, the process used to merge them varied for each program. The four programs can be grouped into two categories:

- Those that create a merged file of personalized letters, saved on disk and later printed using *AppleWorks (MegaWorks* and *Spellworks)*; and
- Those that create merged letters during the actual printing process, eliminating the need to save files or to return to *AppleWorks (HabaMerge* and *AMP)*.

Neither method is foolproof. The first group runs into a secondary storage problem as the separate letters for each record in the data base list can quickly exceed disk space. The second group does not do an acceptable job of merging long fields mid-paragraph. Both systems are potentially awkward, but not uncomfortable to the user who has become familiar with the operation at hand. A complete knowledge of your word processor, in this case *AppleWorks*, is required, a good background in data base management concepts is important, and familiarity with ASCII text files would be helpful.

MERGING TO DISK

MegaWorks and Spellworks

MegaWorks has the best rapport and working relationship with *AppleWorks*. The screens resemble the *AppleWorks* menus. Clear instructions are available in the documentation for transferring data base records through the *Apple-*

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Works clipboard (a hallway through which documents are moved for cut-and-paste purposes) to a word processed file for merging form letters and data base information. Clear on-screen instructions are provided when actually using *MegaWorks* for the merging process.

Both *MegaWorks* and *Spellworks* permit the added option of creating a list directly into a word processor file (see figure 3). If only a few records are to be used on a given occasion, the list method works well; but if extensive record posting is required, the data base works more efficiently (allowing for record selection and sorting) and obviates the need to set up fields over and over again.

Both programs allow you to type entire paragraphs of information into a list and merge them into a letter. We encountered no problems when attempting to merge a lengthy phrase into the middle of a paragraph—all text wrapped appropriately.

MegaWorks will interrupt the merging process when a blank field is encountered. You are then given the opportunity to enter information from the keyboard or to skip the field altogether. You can anticipate a blank field and purposely use it for new and changing information, such as a current date. In fact, an entire "dummy" list can be made (an empty file) so that the user can enter all the information into the fields manually.

Because *MegaWorks* and *Spellworks* create one large *AppleWorks* file containing the results of the merge, saving to disk severely limits the number of letters that can be replicated. Only about 70 one-page letters can be stored on a standard floppy. Larger mailings will require splitting data base files and performing the merge in pieces.

Spellworks creates the basic documents in much the same way as *MegaWorks*. The *Spellworks* documentation is clear and concise. But do make sure you have a notebook and pencil handy. Unlike *MegaWorks*, *Spellworks* requires that you know the pathnames on your data disk. Since there is no easy way to access the disk to check necessary pathnames from within this program, *AppleWorks* must be rebooted—then back to *Spellworks*. Even more frustrating is that if an error in your files is detected during the merge, "Bad List File" is

```
File: MEGA.LETTER              REVIEW/ADD/CHANGE              Escape: Main Menu
--------------------------------------------------------------------------------
$$First $$Middle $$Last
$$Address
$$City $$State $$Zip

$$Salutation

Enclosed is the information you requested concerning
$$Product. I hope that you find it helpful.

If you would like more information, or a live, "no
obligation" demonstration, please contact your area
representative by calling 800 555-1234.  Thank you for
considering XYZ Corporation.

Sincerely,



Hubert Humes
General Manager
--------------------------------------------------------------------------------
Type entry or use ? commands              Line 7  Column 50        ?-? for Help
```

Figure 1.

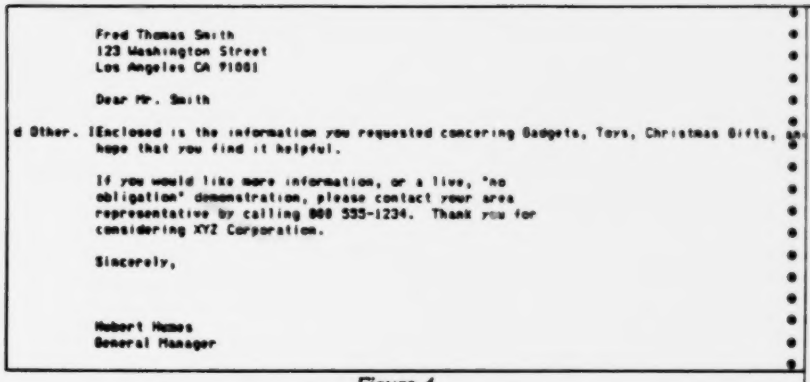
```
File: MEGA.LIST                REVIEW/ADD/CHANGE              Escape: Main Menu

Selection: All records


Record 1 of 20
--------------------------------------------------------------------------------
$$First: Fred
$$Middle: Thomas
$$Last: Smith
$$Address: 123 Washington Street
$$City: Los Angeles
$$State: CA
$$Zip: 91001
$$Salutation: Dear Mr. Smith
$$Product: Gadgets
\: -




--------------------------------------------------------------------------------
Type entry or use ? commands                                    ?-? for Help
```

Figure 2.

```
File: WP.LIS.MEG.SPEL          REVIEW/ADD/CHANGE              Escape: Main Menu
--------------------------------------------------------------------------------
$$First: Fred
$$Middle: Thomas
$$Last: Smith
$$Address: 123 Washington Street
$$City: Los Angeles
$$State: CA
$$Zip: 91001
$$Salutation: Dear Mr. Smith
$$Product: Gadgets
\:
$$First: Joshua
$$Middle:
$$Last: Jones
$$Address: 4333 Lenardo Avenue
$$City: Coast Wells
$$State: NV
$$Zip: 89112
$$Salutation: Dear Mr. Jones
$$Product: Gadgets
\:
--------------------------------------------------------------------------------
Type entry or use ? commands              Line 1  Column 1        ?-? for Help
```

Figure 3.

BEST COPY AVAILABLE



Fred Thomas Smith
123 Washington Street
Los Angeles CA 91001

Dear Mr. Smith

d Other. [Enclosed is the information you requested concering Gadgets, Toys, Christmas Gifts, an
hope that you find it helpful.

If you would like more information, or a live, "no
obligation" demonstration, please contact your area
representative by calling 800 555-1234. Thank you for
considering XYZ Corporation.

Sincerely,

Hubert Humes
General Manager

Figure 4.

flashed to the screen and the merging process comes to a halt. It is tedious to reboot *AppleWorks* and investigate the source files to fix errors, and *Spellworks* gives no indication of what the problem may be. Like *MegaWorks,* you return to *AppleWorks* to print the merged file.

MERGING TO THE PRINTER

HabaMerge and AppleWorks Mailing Program To begin *HabaMerge* we had to first read a seven-page addendum and an extra photocopied page in addition to the original documentation. Ironically, Haba Systems insists it is "making Apples more tempting than ever." With instructions scattered through three documents we were not so tempted, but with stick-to-itiveness we took the plunge anyway.

HabaMerge requires that you save your form letter for future use with a "Print To Disk" operation from within *AppleWorks*. The data base must be saved as a text (ASCII) file. We had difficulty until we closely re-examined the addendum and learned that the pathname for a letter must have the extension .LTR, and the pathname for the data base file must have the extension .LDB.

Once files are ready, *HabaMerge* can be loaded for merging and printing. We soon discovered a major obstacle: *HabaMerge* only permits a field to be used within a paragraph if it is not too lorg or near the end of a line. Otherwise this program refuses to wrap and goes berserk writing out onto the pinfeed edge of the paper and overprinting text (see figure 4). We were able to alleviate this problem by contriving the length of the field and its final location, something we had not anticipated, having just merged the same files using *MegaWorks* and *Spellworks*.

On the good side, *HabaMerge* allows access to disk directories, provides sample files, and permits the luxury of printing to screen for previewing before going to the printer. Letters can also be printed out one at a time, or all at once. It should also be noted that *HabaMerge* has a label program, which the others do not. The *AppleWorks* data base itself can generate labels in a single column, but *HabaMerge* can print labels one, two or three across.

Even though the *HabaMerge* documentation is awkward, the program itself is not. The menus are clear and resemble those in *AppleWorks*.

In the last program, *AppleWorks Mailing Program,* a printed copy of the documentation must first be printed from the disk, a minor inconvenience. Here it is clearly pointed out that *AMP* cannot justify text, so mid-sentence merging should be avoided.

Like *HabaMerge, AMP* requires the form letter to be printed to disk and the data base to be saved as an ASCII text file, operations clearly detailed in the documentation. But like *Spellworks,* pathnames must be written down as no directories are available once the program has been loaded.

AMP allows a wild card for those fields which may be blank (e.g., middle name, job title). An asterisk (*) causes the program to ignore blank fields. This is similar to the *MegaWorks* routine when encountering a blank field, but as with *HabaMerge,* no keyboard entry is allowed.

The Verdict

Each program has its plusses and minuses; there is no perfect mail merge program.

If price is no problem (it costs as much as the other three combined) and remembering pathnames is, then *MegaWorks,* with its on-board, adequate spelling checker, could be the best buy. The documentation, screen menus and sample files provide a step-by-step introduction and guidance through the process. Since sentences and complete paragraphs can be merged anywhere in a form letter, a great deal of personalization is provided. However, disk storage limitations must be considered for those contemplating large mass mailings.

If working with Print to Disk and ASCII routines is not an obstacle, *HabaMerge*'s quick, two-step operation is very attractive. It is inexpensive, has no limit on the number of letters that can be created at one time, has a resident label producing program, and is menu friendly. However, its limp documentation and lack of flexibility in paragraph insertion should not be forgotten.

If price is a major consideration and paragraph insertion is not, the *AppleWorks Mailing Program* is quite satisfactory. This program provides basic, "no frills" merge features for under $30.

Spellworks, the lame duckling, will do a merge. It also has a spelling checker. However, this program provides little help either on-screen or in the documentation for determining specific merge problems, requiring the user to return to *AppleWorks* to identify pathnames and locate errors.

In the roundup, it needs to be repeated that there is no "perfect" mail merge program, as yet, for the *AppleWorks* environment. Teachers will need a clear idea of what they want a mail merge program for, and they will have to look closely at each mail merger's strengths and weaknesses.

MegaWorks Publisher's Reply

None.

Spellworks Publisher's Reply

None.

HabaMerge Publisher's Reply

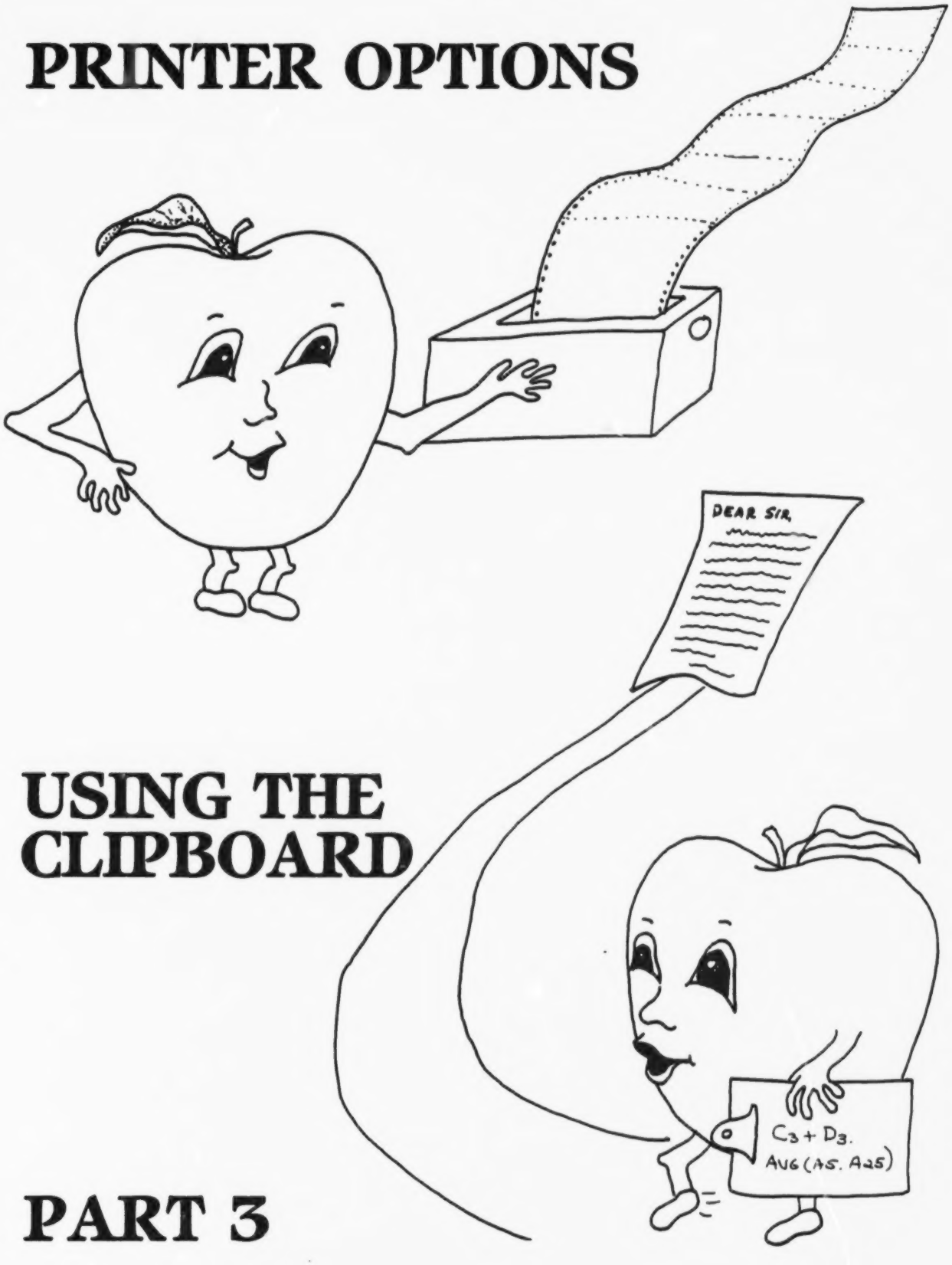
We at Haba Systems are always working to keep our software current and easy to use. Often, software is updated while the manual remains consistent with the older version. We prefer to up-

date our manual by publishing an addendum to incorporate changes. Currently, *HabaMerge* is packaged with a manual and one addendum as documentation. Also, because many people were uncomfortable printing their letters to a disk file, we have included simple step-by-step instructions to aid this process. These three documents will be incorporated into one comprehensive manual as soon as our existing inventory is exhausted. We expect this to occur in the third or fourth quarter of this year. Also, Haba Systems recently shipped a new spelling checker for *AppleWorks*, called *Haba Spell It*, that uses the *AppleWorks* interface and sells for only $49.95. We are also offering a special bundle of *HabaMerge* and *Haba Spell It* for a reduced price.

AppleWorks Mailing Program
Publisher's Reply

None.

PRINTER OPTIONS



USING THE CLIPBOARD

PART 3

PRINTER OPTIONS and USING THE CLIPBOARD

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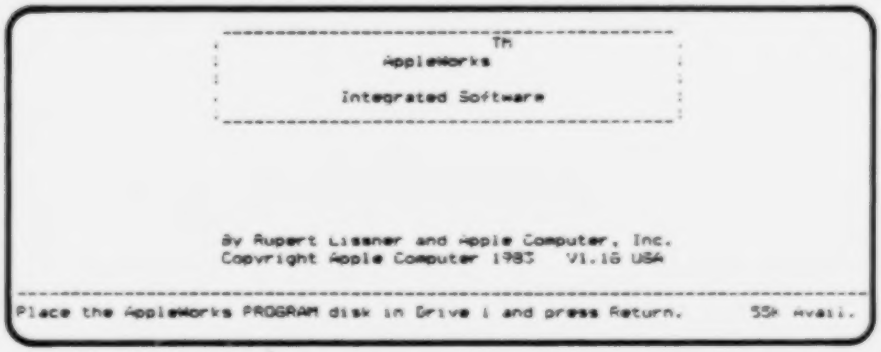
HOW TO LOAD THE APPLEWORKS™ PROGRAM

The AppleWorks program is split into two parts:

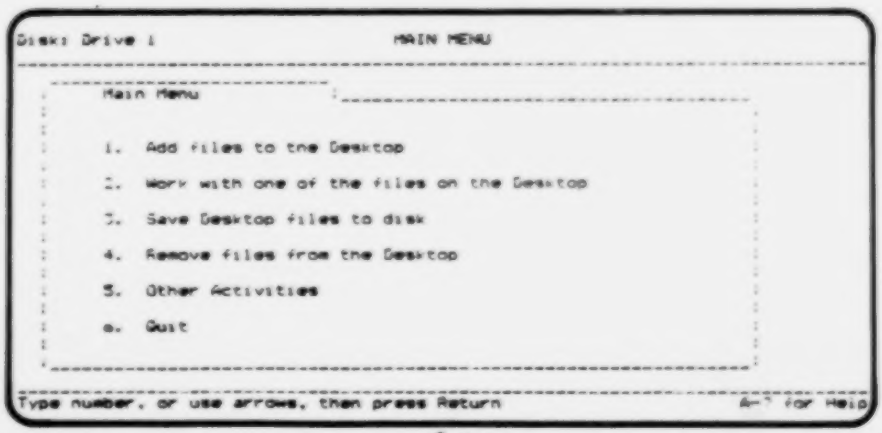
Part 1, the "AppleWorks Startup" is on one side of the disk.

Part 2, the "AppleWorks Program" is either on the back side of the same disk or on a separate disk.

1. Put the AppleWorks Startup disk in drive 1.
2. Put the data disk, that came with this packet, in drive 2.
3. Turn on the monitor.
4. Turn on the computer.
5. If it is already on, hold down the open-apple and CONTROL keys, and tap the RESET key.
6. The COPYRIGHT SCREEN should appear:


AppleWorks
Integrated Software
By Rupert Lissner and Apple Computer, Inc.
Copyright Apple Computer 1983 V1.1B USA
Place the AppleWorks PROGRAM disk in Drive 1 and press Return.
55k Avail.

7. Remove the AppleWorks Startup disk from drive 1.
8. Insert the Program disk in drive 1, and press RETURN.
9. Type today's date using the form shown on the screen.
10. Press RETURN.
11. The AppleWorks MAIN MENU should now be on the screen:


Disk: Drive 1
MAIN MENU
Main Menu
1. Add files to the Desktop
2. Work with one of the files on the Desktop
3. Save Desktop files to disk
4. Remove files from the Desktop
5. Other Activities
6. Quit
Type number, or use arrows, then press Return
for Help

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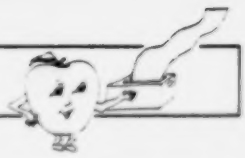
activity 1 BASIC PRINTER OPTIONS



In chapter two you created the word processor file, CLASS SURVEY. In that activity you entered printer commands for underlining and printing in boldface type. Otherwise you used the DEFAULT printer settings for a word processor file:

* platen width = 8 inches
* paper length = 11 inches
* right & left margins = 1 inch
* bottom margin = 2 inches
* top margin = 0

You can begin to type without changing printer settings -- many folks do. When you do decide to use printer option features in your writing, you can set them before you type, as you type, or right before printing. In the following activity we will work with the most common printer options.

PART 1 : GETTING A WORD PROCESSOR FILE FROM A DATA DISK

1. Begin at the Main Menu.

2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. From the current disk: — press RETURN
4. Select : --> CLASS SURVEY — press RETURN

5. Your CLASS SURVEY file should now be on the screen.

PART 2 : CHANGING MARGIN SETTINGS

1. With the cursor at the top of the screen, press open-apple O (for Options).

2. A "menu" listing the printer options for the word processor should now be on the screen:

```
    PW=8.0  LN=1.0  RM=1.0  CI=10  UJ  PL=11.0  TM=0.0  BM=2.0  LI=6  SS
Option:             UJ: Unjustified     GB: Group Begin      BE: Boldface End
                    CN: Centered        GE: Group End        +B: Superscript Beg
PW: Platen Width    PL: Paper Length    HE: Page Header      +E: Superscript End
LN: Left Margin     TM: Top Margin      FO: Page Footer      -B: Subscript Begin
RM: Right Margin    BM: Bottom Margin   SK: Skip Lines       -E: Subscript End
CI: Chars per Inch  LI: Lines per Inch  PN: Page Number      UB: Underline Begin
P1: Proportional-1  SS: Single Space    PE: Pause Each page  UE: Underline End
P2: Proportional-2  DS: Double Space    PH: Pause Here       PP: Print Page No.
IN: Indent          TS: Triple Space    SM: Set a Marker     EK: Enter Keyboard
JU: Justified       NP: New Page        BB: Boldface Begin
```

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3. Note the highlighted line at the top of this menu:

```
   PW=8.0  LM=1.0  RM=1.0  CI=10  UJ  PL=11.0  TM=0.0  BM=2.0  LI=6  SS
Option:
```

1. The platen width (PW) has been set = 8.0 inches.

2. The paper length (PL) has been set = 11.0 inches.

3. The left margin (LM) and the right margin (RM) have both been set = 1.0 inch.

4. The top margin (TM) = 0.0 inch.
   The bottom margin (BM) = 2.0 inches.

5. The characters per inch (CI) has been set = 10.
   This represents PICA type.

6. The number of lines per inch (LI) has been set = 6.

7. The line spacing has been set for single space (SS).

   Note the blinking cursor below the highlighted line. To change a setting, printer option codes are typed there.

We will make three changes.

4. Type : LM — press RETURN
5. For inches type : .5 — press RETURN

6. Type : RM — press RETURN
7. For inches type : .5 — press RETURN

8. Type : BM — press RETURN
9. For inches type : .5 — press RETURN

10. Note the LM. RM and BM indicators on the highlighted line:

```
PW=8.0  LM=0.5  RM=0.5  CI=10  UJ  PL=11.0  TM=0.0  BM=0.5  LI=6  SS
```

NOTE TO DELETE A PRINTER OPTION: Use the zoom command so all options can be seen: move the cursor to the line the option is on: press open-apple D: and press RETURN.

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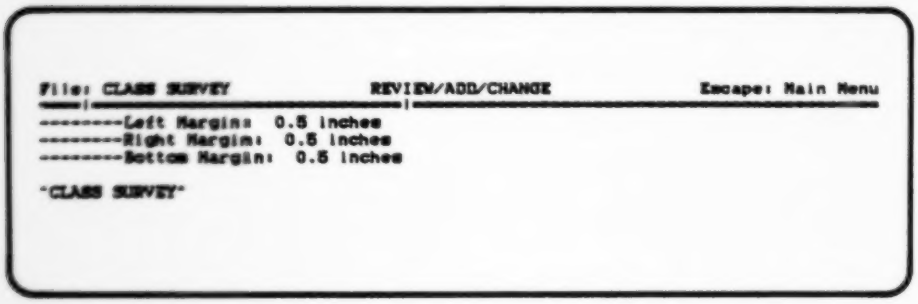
11. Press ESC to return to the REVIEW/ADD/CHANGE screen.

12. Use open-apple Z to view the printer options on the screen:



13. Press open-apple Z to clear the screen of all options and RETURN blots.

PART 3 : HOW TO CENTER A TITLE

Centering is a very common printer option. Unfortunately, AppleWorks requires the open-apple O command rather than providing a CONTROL option, as we did to underline or print boldface. We must begin with the cursor a line ABOVE the text that is to be centered. As an example we will center the title CLASS SURVEY.

1. Move the cursor to the blank line above CLASS SURVEY.

2. Press open-apple O.

3. Type : CN (for Centered) press RETURN

4. Press ESC.
   NOTE: The CN setting is now centering ALL text from this point on.

5. Move the cursor to the blank line below the title.
   NOTE: The cursor MUST be on the line below -- not on the same line.

6. Press open-apple O.

7. Type : UJ (for Unjustified Right Margins) press RETURN

8. Press ESC --- aaaah, things look better now.

   The CN command can be "turned off" by selecting either the UJ (Unjustified Right Margin), or JU (Justified Right Margin) printer option.

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PART 4 : CHANGING THE SIZE OF PRINT

We have centered the title. We can also change the characters-per-inch setting to vary the print size. We could have done this at the same time we were setting the CN option.

1. Again, move the cursor to the blank line above the title.

2. Press open-apple O.

3. Type : CI (for Characters Per Inch) press RETURN
4. For inches, type : 6 press RETURN

5. Press ESC.

6. With the ZOOM "on" (open-apple Z) the screen indicates that the title will be centered and printed at six characters per inch.

With the present setting, the title and ALL text will be printed at six characters per inch. We will print the text at ten characters per inch.

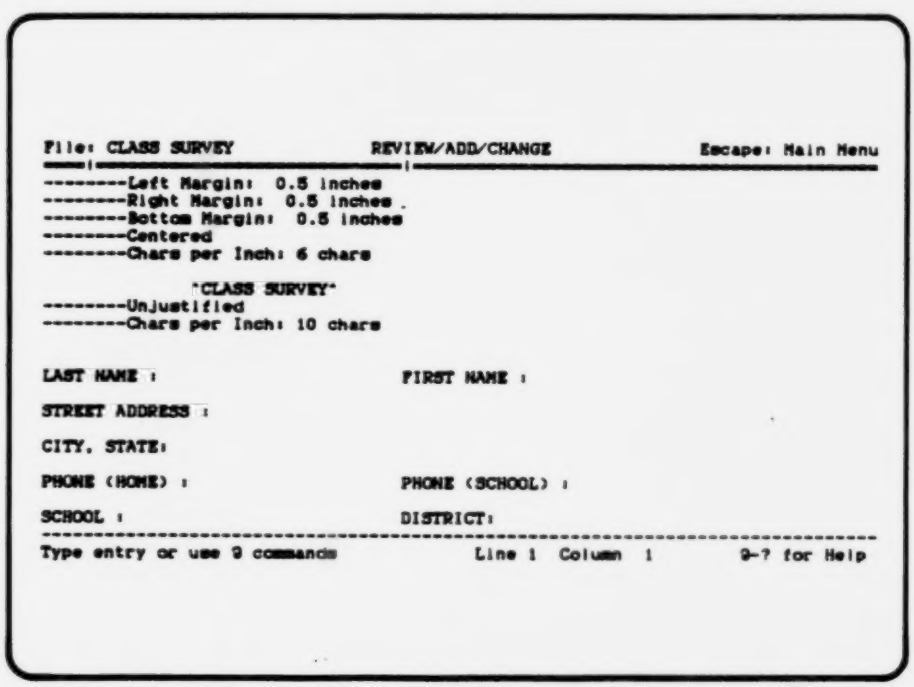
7. Move the cursor to the blank line below the title.

8. Press open-apple O.

9. Type : CI press RETURN
10. For inches, type : 10 press RETURN

11. Press ESC.

12. With the ZOOM "on" the screen should now look like this:
NOTE: The print size does not appear any different on the screen.


File: CLASS SURVEY REVIEW/ADD/CHANGE Escape: Main Menu
--------Left Margin: 0.5 inches
--------Right Margin: 0.5 inches
--------Bottom Margin: 0.5 inches
--------Centered
--------Chars per Inch: 6 chars
"CLASS SURVEY"
--------Unjustified
--------Chars per Inch: 10 chars
LAST NAME : FIRST NAME :
STREET ADDRESS :
CITY, STATE:
PHONE (HOME) : PHONE (SCHOOL) :
SCHOOL : DISTRICT:
Type entry or use 9 commands Line 1 Column 1 9-? for Help

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PART 5 : DETERMINING WHAT WILL BE PRINTED PER PAGE

When ready to print you can run a "page calc" to determine the number of pages that will be printed and where each page break will occur.

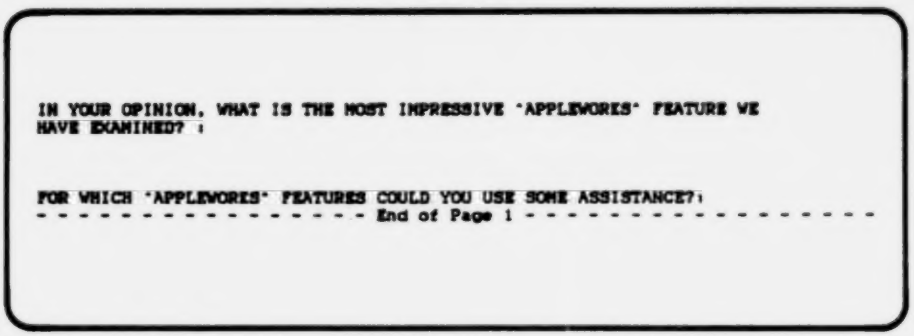
We can accept the page breaks AppleWorks provides. If these page breaks are not acceptable, we can use a printer command to specify where each new page is to begin.

1. The cursor can be anyplace in the file to run a page calc. For easier viewing, place the cursor at the beginning of the file.

2. Press open-apple K (to "Kalculate").

3. For the question "Which printer will be used?" select your printer from the menu. press RETURN

4. Move the cursor through the entire CLASS SURVEY file and note where page one will end:


IN YOUR OPINION, WHAT IS THE MOST IMPRESSIVE 'APPLEWORKS' FEATURE WE HAVE EXAMINED? :
FOR WHICH 'APPLEWORKS' FEATURES COULD YOU USE SOME ASSISTANCE?:
End of Page 1

PART 6 : SETTING "NEW PAGE" MARKERS

According to the "end of page" marker, page one will contain most of the survey information and page two will be almost empty. We will set a NEW PAGE marker so each partner's survey will be printed on a separate page.

1. Move the cursor to the line above the second CLASS SURVEY title -- the one that is NOT centered.

2. Press open-apple O.

3. Type NP (for new page) press RETURN

4. Press ESC.

5. With the ZOOM "on," note the location of the "--------New Page" printer command now on the screen.

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6. Run open-apple K page calc again. Note where the page break will now occur:

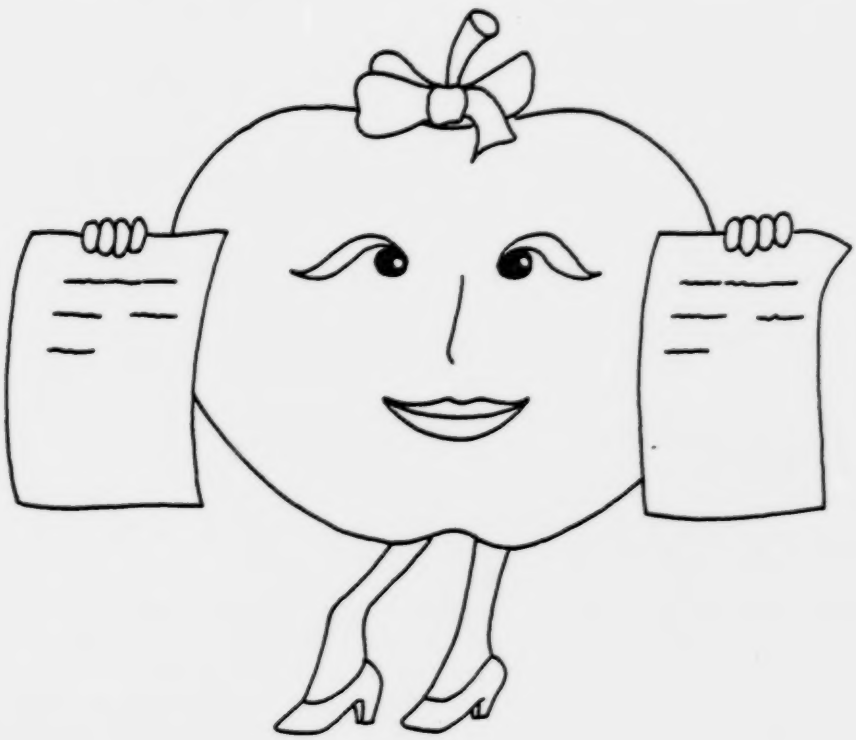
```
DESCRIBE THE "MAIN" THING(S) YOU HOPE TO GAIN FROM THIS COURSE:
- - - - - - - - - - - - - - - - - End of Page 1 - - - - - - - - - - - - - - - - -
--------New Page
"CLASS SURVEY"


LAST NAME :                         FIRST NAME :
STREET ADDRESS :
CITY, STATE:
PHONE (HOME) :                      PHONE (SCHOOL) :
SCHOOL :                            DISTRICT:
```

When this file is printed, both pages will carry the same margin settings. Right, left and bottom margins have not been changed since the beginning of the file.

7. HOWEVER, if you want the title on page two to look like page one, use the CI = 6 and CN printer options.

8. Be sure to save this file.



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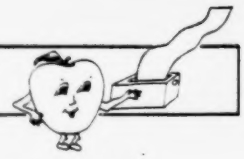
activity 2 COMPLETING A QUESTIONNAIRE



1. Use open-apple Z to switch OFF the printer options and RETURN blots. We could type with the ZOOM on, but the screen would appear crowded.

2. Set the CAPS LOCK key to the UP position. Now you will need to press the SHIFT key for upper case.

3. REMEMBER: use the ARROW keys to move the cursor around the screen -- NOT the RETURN key.

4. Press open-apple E. You will use the overstrike cursor to complete this form.

5. If you make a mistake, use an arrow key to move to the error, then overstrike to correct.

   * USE OPEN-APPLE D FOR BIG MISTAKES.

   * IF THIS CURSOR BEGINS TO DRIVE YOU CRAZY, TURN IT OFF BY AGAIN PRESSING OPEN-APPLE E.

6. For LAST NAME :

   * As you type your last name, note that the FIRST NAME title is not moving towards the edge of the screen. The OVERSTRIKE cursor is "striking over" the spaces separating the two titles. Using this cursor, the questionnaire format remains fixed.

7. For FIRST NAME :

   * Use the TAB key to move to this title.
     Use the ARROW key to position the cursor past the colon.

8. For PHONE (SCHOOL) :
   and
   for DISTRICT :

   * Use the TAB and ARROW keys to move the cursor.

9. For MAJOR SUBJECTS YOU TEACH :

   * List the subjects you teach on one line. As you get close to the RIGHT margin you do not need to press RETURN. A word processor "wraps" text automatically to the next line. This built-in feature is called WORD WRAP.

10. Note the word wrapping as you complete the remaining four questions.

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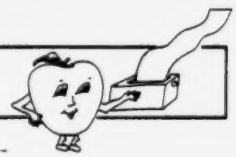
11. Your questionnaire now contains information for one partner. Use the down arrow key to bring the second copy of this questionnaire onto the screen.

12. Partner #2 should now complete this form, following the instructions just outlined.

13. Press open-apple E to return the insert cursor.

activity 3 CREATING A WORD PROCESSOR TEMPLATE



You have spent a fair bit of time setting up and completing this questionnaire. Sometimes it is best to have both the original copy and completed form. In this activity we will save both versions.

LET'S SEE:

* THE "BLANK" QUESTIONNAIRE FORM HAS BEEN SAVED ON YOUR DATA DISK.

* YOUR "COMPLETED" QUESTIONNAIRE IS CURRENTLY IN THE MEMORY OF THE COMPUTER.

* YOU MUST SAVE YOUR WORK BEFORE THE MACHINE IS TURNED OFF.

* IF WE SAVE THE CLASS SURVEY FILE NOW, THE INFORMATION JUST ENTERED WILL BE ON THE DATA DISK.

* I PROPOSE THAT WE CHANGE THE NAME OF THE FILE THAT IS IN MEMORY -- AND THEN SAVE IT.

* THAT WAY WE WILL FINISH WITH TWO FORMS:

  the completed version that you can print;

  and a blank form that can be stored on the data disk for future use.

* BY USING THIS PROCESS, WE CAN USE A WORD PROCESSOR FILE AS A TEMPLATE. THIS CAN BE VERY HANDY FOR:

  SCHOOL CORRESPONDENCE (e.g., honor roll or sports recognition)

  REPORTS or RECORDS (e.g., IEP, TITLE 1, or progress reports)

  LESSON PLANS (e.g., instructions for a substitute teacher)

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To change the name of a file in memory, before saving:

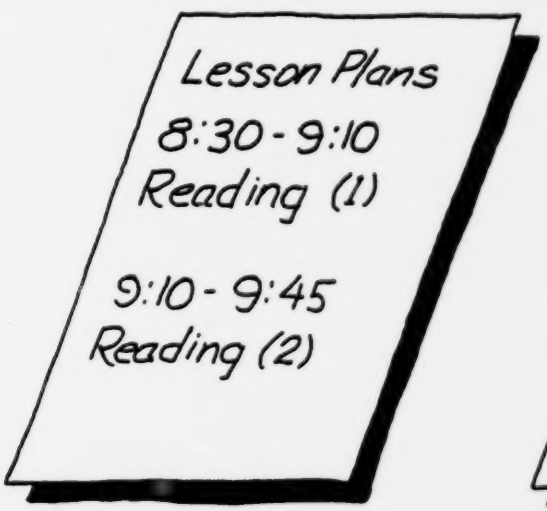
1. Press open-apple N (for Name Change).
2. Note the filename displayed at the bottom of the screen.
3. Press open-apple Y to erase the current filename.
4. Now type a new filename, such as LINDAS.FORM.

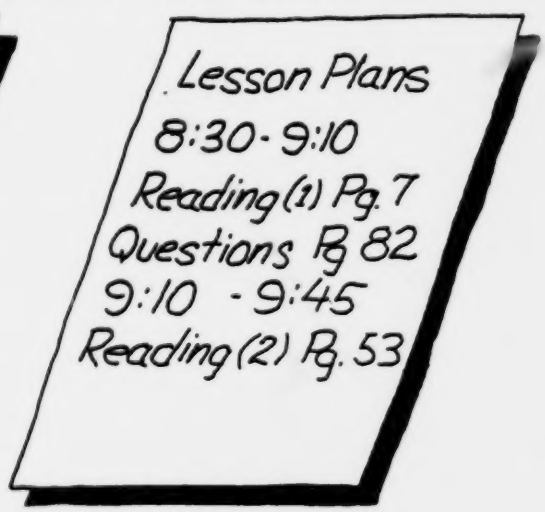
> Filenames can contain up to 15 characters, including uppercase and lowercase letters, numbers, spaces and periods -- but no punctuation, e.g., commas or apostrophes.

5. Press RETURN.
   Note your NEW filename at the top of the screen.
6. Save this file on your data disk.
7. ESC to the Main Menu.
8. Select : 5. Other Activities press RETURN
9. Select : 2. List all files on the current disk drive.

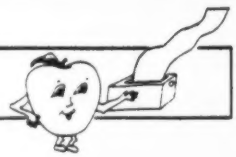
> A listing of all files on your data disk will be displayed on the screen. Both versions of CLASS SURVEY should be listed along with file size, the date entered and whether it is a word processor, data base or spreadsheet file.

10. ESC to the Main Menu.
11. Depending upon time and printer availability, print the completed and renamed CLASS SURVEY file.





activity 4 MORE PRINTER OPTIONS



We set some of the most common printer options when formatting the CLASS SURVEY file. In this activity we will examine other printer options. The word processor file is a school newsletter from Parker Elementary School in Eugene, Oregon. The news articles have already been entered. Last minute layout tasks will include:

* Setting TAB markers
* Setting the command for printing page numbers
* Adjusting the top margin for the school letterhead
* Adjusting margins so pictures can be pasted beside articles
* Adding the School Calendar listing upcoming events
* Adding the coaches' report for the girls' gymnastics team
* Running a final page calc and setting necessary NEW PAGE markers

PART 1 : ADDING SEVERAL FILES TO THE DESKTOP

1. Begin at the Main Menu.

2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. From the current disk: — press RETURN

4. Select : --> SCHOOL NEWS
   --> SCHOOL CALENDAR
   --> TEAM SCORES

5. Press RETURN.

6. Press open-apple Q.

The files you have added are listed on the screen under "Desktop Index."

7. Select SCHOOL NEWS — press RETURN

8. The March 1985 school newsletter for Parker Elementary should now be on the screen:

PARENT GROUP NEWS

The Parker Parents met in the lunchroom recently. The programe featured a talk with questions and answers by Interim Superintendent, Margaret Nichols. She gave a very interesting preentation concerning various subjects.

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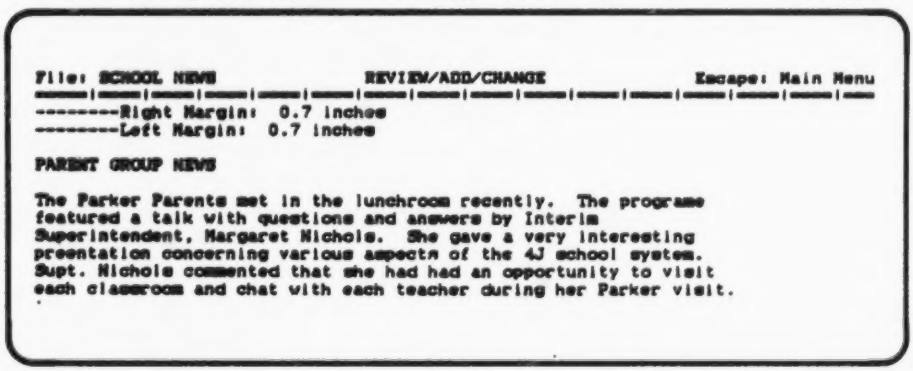
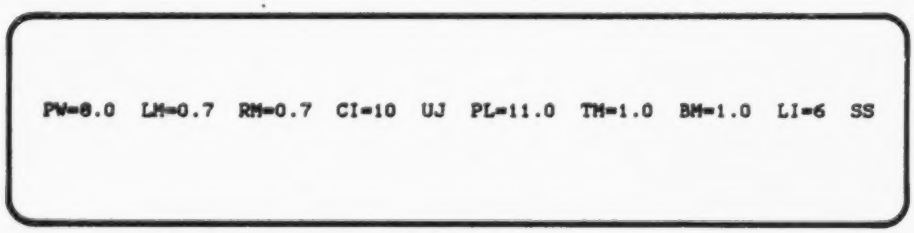
This newsletter has not been checked for spelling or typing errors. It is becoming common practice to use a spelling checker program before printing important documents. There are several spelling checkers available for the AppleWorks word processor. A comparative review of three programs has been included at the end of this chapter.

PART 2 : SETTING MARGINS

1. Move the cursor to the blank line at the top of this file.
2. Press open-apple Z.
3. The top of your screen will indicate that both right and left margins have already been set to 0.7 inches.


File: SCHOOL NEWS REVIEW/ADD/CHANGE Escape: Main Menu
--------Right Margin: 0.7 inches
--------Left Margin: 0.7 inches
PARENT GROUP NEWS
The Parker Parents met in the lunchroom recently. The programe featured a talk with questions and answers by Interim Superintendent, Margaret Nichols. She gave a very interesting preentation concerning various aspects of the 4J school system. Supt. Nichols commented that she had had an opportunity to visit each classroom and chat with each teacher during her Parker visit.

4. Press open-apple O and set both bottom and top margins to 1 inch.
5. Check the highlighted line at the top of the option menu to note the new TM and BM settings:



6. Press ESC, we are through with the options menu.

PART 3 : SETTING TAB MARKERS

1. Press open-apple T (for Tabs).
2. Remove all the default TAB markers.
3. Set markers for columns 14 and 22.
4. Press ESC, we are through setting TABS.

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PART 4 : PRINTING PAGE NUMBERS

1. Make sure the cursor is still on the blank line at the top of this file.

2. Press open-apple O.

3. Type : FO (for Page Footer) press RETURN

> * If you <u>want</u> the page number to appear on the LAST printing line of the page, use the FO printer option.
>
> * Likewise, if you want the page number to appear on the first printed line of each page, use the HE (page header) printer option.
>
> * If we want each page number to be <u>centered</u> on the line, include a CN setting.

4. Type : CN press RETURN

5. Press ESC. We need to return to the REVIEW/ADD/CHANGE screen to do some typing.

6. Leave the cursor on the blank line at the top of the screen.

7. Type : page
8. Type : one space with the SPACE BAR

9. Again, press open-apple O. We need one more printer option, the command indicating where each sequential page number is to appear.

10. Type : PP (for Print Page Number) press RETURN

11. Press ESC.

12. Place the cursor on the caret (^) after the word "page." Note what is indicated at the bottom of the screen.

13. What a nuisance! The CN command is centering the entire newsletter. Move the cursor to the line displaying PARENT GROUP NEWS.

14. Press open-apple O.

15. Type UJ and press RETURN to return the text to the left margin.

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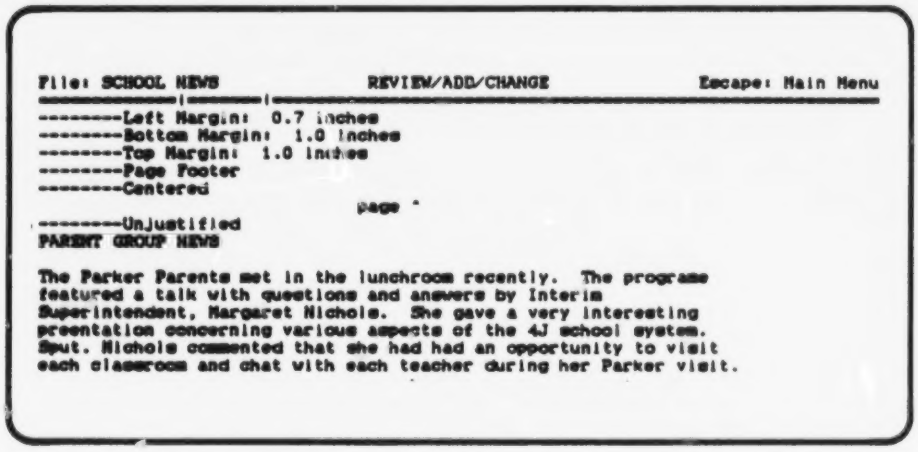
16. Press ESC. Your screen should now indicate:


File: SCHOOL NEWS
REVIEW/ADD/CHANGE
Escape: Main Menu
--------Left Margin: 0.7 inches
--------Bottom Margin: 1.0 inches
--------Top Margin: 1.0 inches
--------Page Footer
--------Centered
page
--------Unjustified
PARENT GROUP NEWS
The Parker Parents met in the lunchroom recently. The programe featured a talk with questions and answers by Interim Superintendent, Margaret Nichols. She gave a very interesting presentation concerning various aspects of the 4J school system. Sput. Nichols commented that she had had an opportunity to visit each classroom and chat with each teacher during her Parker visit.

AppleWorks determines the page count. It increments and prints the correct page number on each page. Since you placed the PP marker on the first page, this is where the page numbering will first appear.

Like a margin setting, the page numbering command affects all text (pages) following the marker.

PART 5 : SPACING THE NEWSLETTER HEADING

Next we will set up the spacing and titles for the newsletter heading. This newsletter uses the school logo and address at the top of the first page. We will use a printer option to skip the necessary spaces between the titles MARCH NEWSLETTER and SCHOOL CALENDAR.

1. Place the cursor on the line indicating "--------Unjustified."
2. Press **RETURN** to create a blank line above this printer option.
3. Move the cursor to this blank line.
4. Type : **MARCH NEWSLETTER.** (Why is this text centered?)
5. Press **RETURN.**
6. Type : 1986 press RETURN
7. There needs to be a one-inch blank space for the school logo.

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8. Press open-apple O.

9. Type : SK (for Skip lines) press RETURN
10. For lines, type : 6 press RETURN

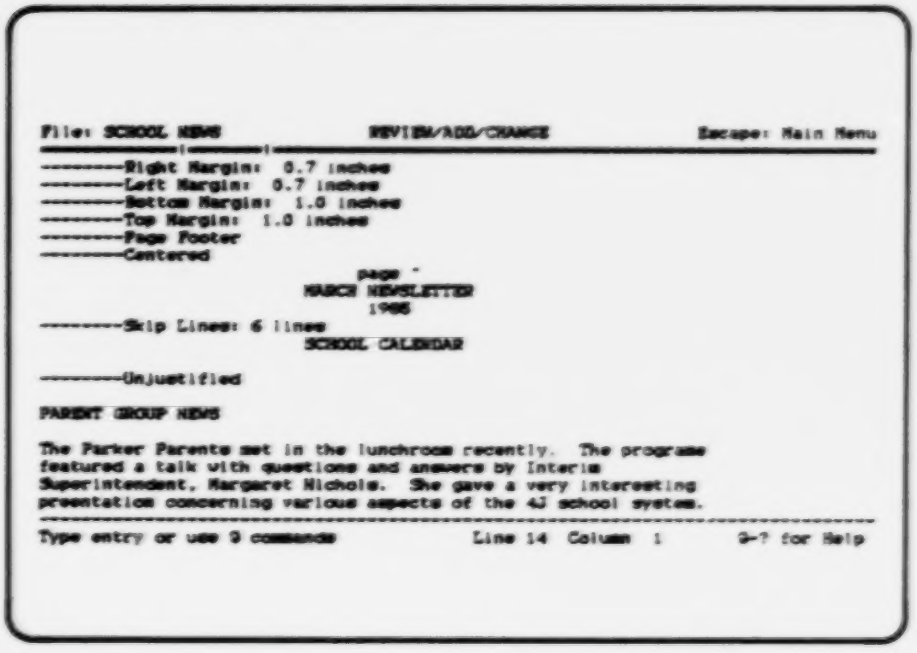
> Note the LI setting on the highlighted line of the options menu. The default LINES PER INCH setting is 6. With our "skip lines" setting, the printer will now skip six lines, which equals one inch, before printing further text. (Some printers provide 8 lines per inch -- which could be set by using the LI option.)

11. Press ESC.

12. With the cursor on the blank line, type : SCHOOL CALENDAR

13. Press RETURN.

14. Your screen should look like this:


File: SCHOOL NEWS
REVIEW/ADD/CHANGE
Escape: Main Menu
--------Right Margin: 0.7 inches
--------Left Margin: 0.7 inches
--------Bottom Margin: 1.0 inches
--------Top Margin: 1.0 inches
--------Page Footer
--------Centered
page .
MARCH NEWSLETTER
1986
--------Skip Lines: 6 lines
SCHOOL CALENDAR
--------Unjustified
PARENT GROUP NEWS
The Parker Parents met in the lunchroom recently. The programs featured a talk with questions and answers by Interim Superintendent, Margaret Nichols. She gave a very interesting presentation concerning various aspects of the 4J school system.
Type entry or use 9 commands
Line 14 Column 1
9-? for Help

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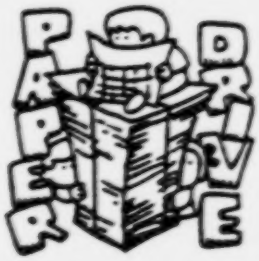
PART 6 : ADJUSTING MARGINS FOR ILLUSTRATIONS



The school newsletter is advertising a paper drive. A cartoon will be placed beside this article, so the margins need to be adjusted.

1. Move the cursor to the first character of PAPER DRIVE.

2. Press open-apple O.

3. For option type : LM press RETURN
   We will increase this margin to allow space for the cartoon.

4. For inches type : 2.2 press RETURN
   The current left margin of .7 inch, plus the cartoon width, 1.5 inches.

5. Press ESC.
   Note the text adjusting to this new margin setting.

6. With the Zoom "on" you can read the new left margin setting.

   NOTE: text above this setting is still determined by the LM and RM settings at the top of the file.

7. Move the cursor to the blank space below the paper drive article. Reset the left margin to .7 inch.

8. Press ESC to return to the REVIEW/ADD/CHANGE screen.

   There is a cartoon to go along with the article from the school nurse.

9. Move the cursor to the first character of NURSE'S NOTES.

10. Set the right margin to 3.0 inches.
    This picture is 2.3 inches wide.

11. Move the cursor to the beginning of the sentence "The most effective . . . ."

12. Reset the right margin to .7 inch.

13. Use the "RULER" to quickly move to the top of the file.

14. Move the cursor through these articles. Note how the text adjusts to the most recent margin settings.

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PART 7 : SETTING THE RIGHT MARGIN TO PRINT "JUSTIFIED"

If we were to print this newsletter right now, all right margins would appear "ragged." The NURSE'S NOTES article would appear:

> NURSE'S NOTES - Chickenpox and Hepatitis A
>
> It must be spring - chickenpox is here! If your child has not had this childhood disease, you may want to review the symptoms: slight fever, the child usually does not feel very ill, a skin rash which changes from rosey red to water blister, to scab. The rash is heaviest in covered areas and may appear on the scalp and in the mouth.
>
> Another communicable disease which we are seeing on the increase in the Eugene area is hepatitis A. The symptoms of hepatitis include fatigue, loss of appetite, nausea, vomiting, abdominal

AppleWorks provides a printer option causing the right margin to print even.

1. Move the cursor to the first character of NURSE'S NOTES.
2. Press open-apple O.
3. For options, type : JU (for Justification) press RETURN
4. Press ESC.

Right margin justification does not appear on screen. However, when printed this section will appear:

> NURSE'S NOTES - Chickenpox and Hepatitis A
>
> It must be spring - chickenpox is here! If your child has not had this childhood disease, you may want to review the symptoms: slight fever, the child usually does not feel very ill, a skin rash which changes from rosey red to water blister, to scab. The rash is heaviest in covered areas and may appear on the scalp and in the mouth.
>
> Another communicable disease which we are seeing on the increase in the Eugene area is hepatitis A. The symptoms of hepatitis include fatigue, loss of appetite, nausea, vomiting, abdominal

5. Move the cursor to the beginning of the sentence "The most effective . . . ."

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6. Press open-apple O.

7. For option, type : UJ (for Unjustified) press RETURN

8. Now, reset and right justify the margin for the entire EUGENE SYMPHONY QUARTET article. The picture to be printed along with this article is 1.7 inches wide.

9. At the end of this article return the margin setting to .7 inch with no further right justification.

activity 5 USING THE CLIPBOARD TO COMBINE WORD PROCESSOR FILES

All the articles have been word processed, the margins have been adjusted to accommodate illustrations, and the spacing for the heading has been set.

The school calendar still needs to be added to the newsletter. The OFFICIAL district calendar was word processed at the beginning of the school year and now serves as a template. As building events are scheduled, they are added to the SCHOOL CALENDAR file, and used for various building communications.

PART 1 : COPYING TEXT FROM ONE WORD PROCESSOR FILE TO ANOTHER

1. With the ZOOM "on" move the cursor to the space between "--------Unjustified" and "PARENT GROUP NEWS."

We are about to move a copy of the SCHOOL CALENDAR to this line. How would the text appear if we moved the calendar ABOVE the "Unjustified" marker?

2. Press open-apple Q (for Quick file).
This is a handy command for quickly switching between Desktop files.

3. Highlight : SCHOOL CALENDAR.

4. Press RETURN.
You are now in another word processor file.

5. Move the cursor to the first character of "March 15."

6. Press open-apple C (for Copy).

7. Select : To clipboard (cut) press RETURN

8. Use the down arrow key to highlight all text, through:
"June 13 (Th) Last Day of School."

9. Press RETURN. A copy should now be on the Clipboard.

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10. Press open-apple Q.

11. Highlight : SCHOOL NEWS press RETURN
The cursor should still be on the blank line.

12. Press open-apple M.

13. Select : From Clipboard (paste). press RETURN
A copy of the School Calendar should now be in your SCHOOL NEWS file.

14. Add another RETURN for more spacing. Examine the newsletter.

PART 2 : EDITING A WORD PROCESSOR DOCUMENT

Three upcoming events still need to be included in the calendar.

1. Insert the following activities into the SCHOOL CALENDAR section of the newsletter.

   * Use the RETURN key to get the spacing shown below

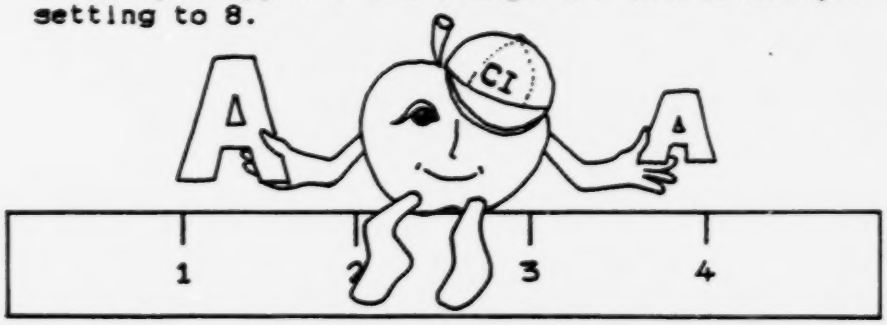
   * Use the TAB key for column spacing

May 16	(Th)	Presentation for 5th Grade Parents 7:30-8:30 pm by Spencer Butte Middle School - Lunchroom
May 23	(Th)	Grade 4-5 Regional Track Meet-Churchill Grade 4 --- 9 am - 11:15 am Grade 5 --- 12 pm - 2:15 pm
May 24	(F)	Marionette Show - "The Prince and the Frog" by Celeste Bennett 10 am & 1 pm

There has been a last minute decision to print the school newsletter articles at eight characters per inch. The School Calendar will remain at 10 characters per inch.

2. Move the cursor to the first character of PARENT GROUP NEWS.

3. Press open-apple O and change the characters per inch setting to 8.



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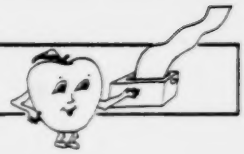
activity 6 SPREADSHEET PRINTER OPTIONS



The girls' gymnastics coach would like to have the results of the first gymnastic meet included in the school newsletter. The individual and team results are in the AppleWorks spreadsheet file, TEAM SCORES. We will switch to this file, take a look at how spreadsheet printer options are displayed, and then transfer a copy of the SPREADSHEET through the Clipboard to our WORD PROCESSOR file.

1. Press open-apple Q.
2. Select : TEAM SCORES press RETURN

3. A gymnastics team spreadsheet should be on the screen.

File: TEAM SCORES REVIEW/ADD/CHANGE Escape: Main Menu

	A	B	C	D	E	F
1	EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
2						
3						
4	KATHY	6.0	8.5	6.5	8.0	28.0
5	TIFFANY	5.0	7.5	7.5	9.0	29.0
6	SHANNON	8.5	6.0	7.0	8.0	29.5
7	VICKI	7.5	7.0	8.5	8.5	31.5
8	STEPHANIE	7.5	7.5	7.5	8.5	31.0
9	TAYAH	8.0	8.0	6.5	9.0	31.5
10	CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
11						
12						
13	AVERAGE	7.2	7.4	7.5	8.6	30.7
14	HIGH	9	8.5	9	9	34.5
15	LOW	5	6	6.5	8	28
16						
17						
18						

A1: (Label, Layout-C) EVENT :

In chapter one we examined the process for printing a spreadsheet. At that time we accepted all the DEFAULT printer options. The Open-apple O command displays printer options available for a spreadsheet.

4. Press open-apple O.

The spreadsheet printer options menu has fewer settings than the word processor's.

File: TEAM SCORES PRINTER OPTIONS Escape: Review/Add/Change

Left and right margins			**Top and bottom margins**		
PW:	Platen Width	8.0 inches	PL:	Paper Length	11.0 inches
LM:	Left Margin	0.0 inches	TM:	Top Margin	0.0 inches
RM:	Right Margin	0.0 inches	BM:	Bottom Margin	0.0 inches
CI:	Chars per Inch	10	LI:	Lines per Inch	6
	Line width	8.0 inches		Printing length	11.0 inches
	Char per line (est)	80		Lines per page	66

Formatting options

SC:	Send Special Codes to printer	No
PH:	Print report Header at top of each page	Yes
	Single, Double or Triple Spacing (SS/DS/TS)	SS

Type a two letter option code

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5. Note the PH (Print report Header) setting in the middle of the screen. The default setting is Yes.

We do not need the spreadsheet filename or date to appear above the team scores. We will turn this report header setting off before sending the spreadsheet to the clipboard.

6. At the bottom of the screen, type : PH press RETURN
   Note: The PH setting has now switched to No.

Setting margins and characters per inch for a spreadsheet is similar to the process we followed for a word processor file.

7. At the bottom of the screen, type : LM press RETURN
8. For inches type : .7 press RETURN
   Note: the number following "char per line (est)" has changed.

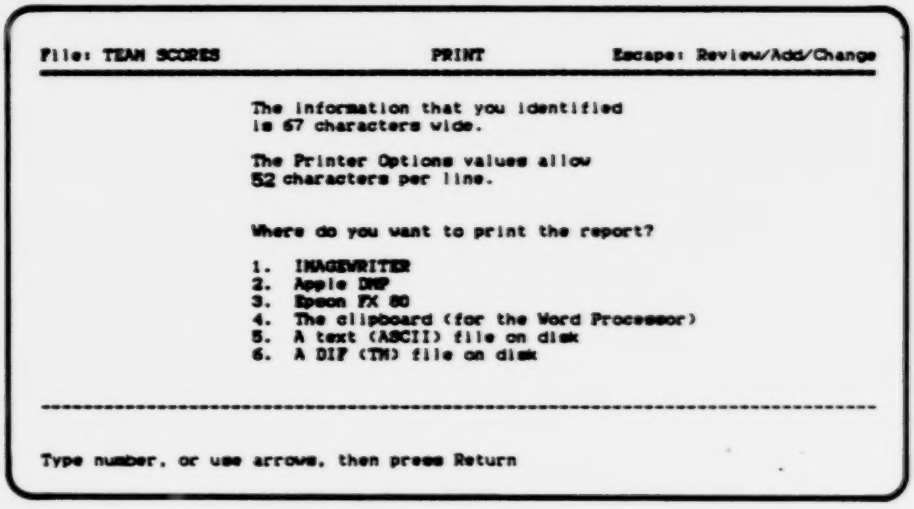
9. Type : RM press RETURN
10. For inches type : .7 press RETURN

11. Type : CI press RETURN
12. For Characters type : 8 press RETURN
    Note: The "char per line (est)" is now showing the number 52.

13. Press ESC.

To transfer information from a spreadsheet (or data base) to a word processor file, open-apple P (to Print), not open-apple C (to Copy) is used.

14. Press open-apple P.
15. Select : All press RETURN
    Note the message on the screen:


File: TEAM SCORES
PRINT
Escape: Review/Add/Change
The information that you identified is 67 characters wide.
The Printer Options values allow 52 characters per line.
Where do you want to print the report?
1. IMAGEWRITER
2. Apple DMP
3. Epson FX 80
4. The clipboard (for the Word Processor)
5. A text (ASCII) file on disk
6. A DIF (TM) file on disk
Type number, or use arrows, then press Return

With the current printer option settings, 52 characters per line will be printed -- to the clipboard or printer. Information beyond 52 characters will not be included. If we want all 67 characters in each line to be included we can either decrease the margins, or increase the characters per inch setting.

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16. Press ESC to return to the spreadsheet.

17. Press open-apple O. Change the CI setting to 12.

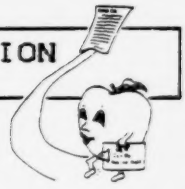
18. Press ESC.

19. Repeat steps 14 and 15 and again note the screen message:

```
File: TEAM SCORES                PRINT              Escape: Review/Add/Change

                The information that you identified
                is 67 characters wide.

                The Printer Options values allow
                79 characters per line.


                Where do you want to print the report?

                1.  IMAGEWRITER
                2.  Apple DMP
                3.  Epson FX 80
                4.  The clipboard (for the Word Processor)
                5.  A text (ASCII) file on disk
                6.  A DIF (TM) file on disk

--------------------------------------------------------------------------------
Type number, or use arrows, then press Return
```

By increasing the characters per inch setting the entire gymnastics team spreadsheet can be printed. With AppleWorks you can choose to print from four to 24 characters per inch, depending upon the capability of your printer.

activity 7 TRANSFERING SPREADSHEET INFORMATION INTO A WORD PROCESSOR FILE.



1. Select : The clipboard (for the Word Processor)

2. Press RETURN.

A message will indicate that the spreadsheet is on the clipboard.

3. Press the SPACE BAR key.

4. Press open-apple Q, highlight the SCHOOL NEWS file and press RETURN.

5. Move the cursor to the second RETURN blot below the article describing the family asthma program.

6. Press open-apple M.

7. Select : From clipboard (paste) press RETURN

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A copy of the spreadsheet has been transferred into the word processor file . . . but the layout appears different:

File: SCHOOL NEWS | REVIEW/ADD/CHANGE | Escape: Main Menu

EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
KATHY	5.0	8.5	6.5	8.0	28.0
TIFFANY	5.0	7.5	7.5	9.0	29.0
SHANNON	8.5	6.0	7.0	8.0	29.5
VICKI	7.5	7.0	8.5	8.5	31.5
STEPHANIE	7.5	7.5	7.5	8.5	31.0
TAYAH	8.0	8.0	6.5	9.0	31.5

This word processor file is set for 8 characters per inch. This setting affects the spreadsheet text, which is "wrapping" and appears double spaced.

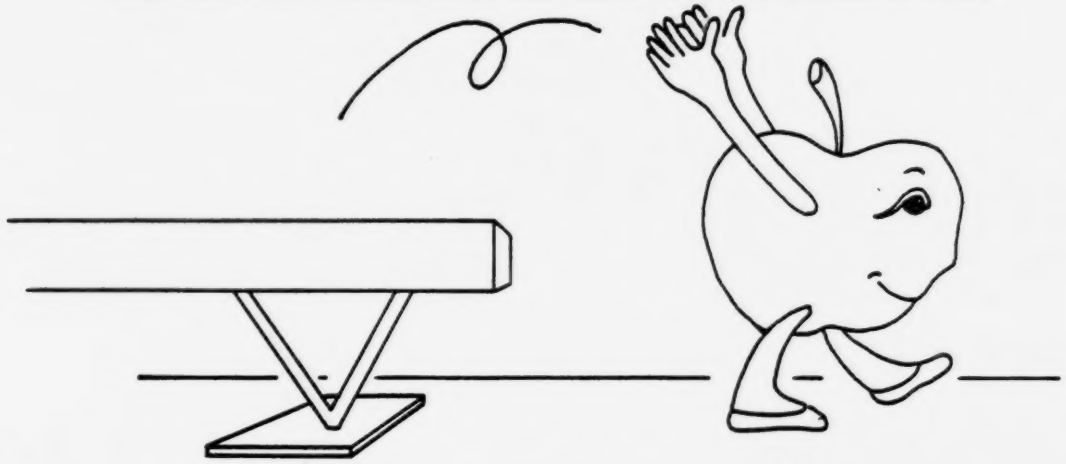
8. With the cursor on a blank line above the word EVENT, set the characters per inch: first to 10, then 12.

9. By changing this setting, a complete spreadsheet row will fit on one word processed line:

File: SCHOOL NEWS | REVIEW/ADD/CHANGE | Escape: Main Menu

--------Chars per Inch: 12 chars

EVENT :	VAULT	UNEVEN BARS	FLOOR EXERCISE	BALANCE BEAM	TOTAL POINTS
KATHY	5.0	8.5	6.5	8.0	28.0
TIFFANY	5.0	7.5	7.5	9.0	29.0
SHANNON	8.5	6.0	7.0	8.0	29.5
VICKI	7.5	7.0	8.5	8.5	31.5
STEPHANIE	7.5	7.5	7.5	8.5	31.0
TAYAH	8.0	8.0	6.5	9.0	31.5
CAROLYN-ANN	9.0	7.5	9.0	9.0	34.5
AVERAGE	7.2	7.4	7.5	8.6	30.7
HIGH	9	8.5	9	9	34.5
LOW	5	6	6.5	8	28



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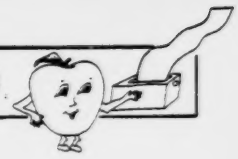
activity 8 JUST A FEW MORE PRINTER OPTIONS



1. Use open-apple K to calculate the number of pages.

2. Move the cursor through the newsletter to see how each page will appear.

How many pages will there be in this newsletter? _____

3. Set NEW PAGE markers so unbroken articles will appear on each page.

We will set a printer option that will stop the printer during printing.

4. Move the cursor to the blank line below "THIS NEWSLETTER HAS BEEN FORMATTED AND EDITED BY."

5. Press open-apple O.

6. Type : EK (for Enter from the Keyboard) press RETURN

With this feature the printer will stop printing at this point, allowing you to type information directly from the keyboard into the document. This feature can be very usetul for personalizing a letter or report. If you place the cursor on the EK caret (^), "Enter Keyboard" will be displayed at the bottom of the screen.

7. Move the cursor to the top of the file.

8. Type : PE (for Pause Each Page) press RETURN

With this command the printer stops at the end of each page. If the format is acceptable, you can press the SPACE BAR key to continue printing. If you DON'T like something, pressing the ESC key stops the print routine. This feature can save a lot of paper.

Note: The PH (for Pause Here) printer option will also stop the printer wherever this marker is placed. This option can be placed anywhere in the file, as many times as necessary.

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9. Move the cursor to the last page in the file.

10. Press open-apple O, type PN (for Page Number) and press RETURN.

11. For "number", type : 100

> With this option you control the page numbering. This command overrides how the program would number the pages. After typing PN you are asked to specify a beginning page number (e.g., page 100). From that page on, all pages will be numbered accordingly.

12. When you are finished, save this file.

13. Depending upon time and printer availability, print this newsletter.

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activity 9 COPYING TEXT BETWEEN WORD PROCESSOR FILES

In this activity you will create a word processor file and type answers to several riddles. Next you will load a word processor file containing the questions. To pair up questions and answers, you will use the AppleWorks copy and move commands and the Clipboard. AppleWorks refers to this process as its "cut and paste" feature.

Our examples will be short and silly. However, the concept is called "Boilermaking": creating documents by transferring sections of text (e.g., sentences, paragraphs or pages, etc.) from one file to another.

PART 1 : CREATING A WORD PROCESSOR FILE FROM SCRATCH

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 3. Make a new file: Word Processor — press RETURN
4. Select : 1. From scratch — press RETURN
5. For filename, type : ANSWER FILE — press RETURN

6. Type the following list of riddle answers. Leave two blank lines between each answer.

   A: A watchdog.

   A: A bulldozer.

   A: Neither -- they both burn shorter.

   A: Because the horns didn't work.

   A: A bee flying backwards.

   A: A hare brush.

   A: A lawn mooer.

   A: Good, bad and convenient.

PART 2 : ADDING A WORD PROCESSOR FILE FROM THE DATA DISK

1. ESC to the Main Menu.

2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. Get files from current disk — press RETURN
4. Select : --> Q AND A — press RETURN

5. A word processor file containing riddle questions should now be on the screen.

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PART 3 : TRANSFERRING COPIES TO THE CLIPBOARD

Now we will combine the questions and answers. The process will involve first copying text to the Clipboard (cutting), then moving it from the Clipboard (pasting) into another word processor file.

We will begin by finding the answer for "Why did the farmer put bells on his cow?"

1. Press open-apple Q (to quickly switch to another file). A Desktop Index listing the files in memory will appear on the screen.

2. Select : **ANSWER FILE** press RETURN

3. Use an arrow key to move the cursor to: "A: Because the horns didn't work."

4. Press open-apple C (to copy).

5. Select : **To clipboard (cut)** press RETURN

6. Use the arrow key to highlight the entire answer. Include the **RETURN** blot at the end of the sentence.

7. Press **RETURN**.

8. Note that the **REVIEW/ADD/CHANGE** screen looks the same, but with a little luck a copy of the answer is now on the Clipboard.

9. Press open-apple Q to again view the Desktop Index.

10. Select : **Q AND A** press RETURN

11. With the zoom on, move the cursor to the second **RETURN** under the farmer question.

12. Press open-apple M (to move).

13. Select : **From clipboard (paste).** press RETURN

The answer has been moved off the Clipboard. There are now two (2) "Because the horns didn't work" answers, one in each word processor file. Next we will repeat this process with a slight variation.

14. Switch to the **ANSWER** file

15. Make a copy of "A: A bulldozer" to the Clipboard.

16. Again switch to the **Q AND A FILE.**

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17. Move the cursor to the second RETURN under:
"Q: What do you call a sleeping bull?"

18. This time press open-apple C.

19. Select : From clipboard (paste) press RETURN
The answer should now be on the screen.

You now have three (3) copies of "bulldozer," one in each file AND one still on the Clipboard (you didn't move it, but copied it).

20. To check: Move the cursor down one line and copy a second "bulldozer" from the Clipboard into this file.

> Information transferred to the Clipboard, and then COPIED into another file, will remain in memory until it is either moved off or SOMETHING ELSE IS COPIED TO THE CLIPBOARD. Note that the Clipboard can hold only one copy at a time. Now for a third variation:

21. Switch to the ANSWER file to find the rabbit answer.

22. Position the cursor at the beginning of the correct answer and press open-apple M (to move).

23. Select : To clipboard (cut).

24. Highlight the answer, and the RETURN blot press RETURN

25. Note the screen. Our hare brush answer is no longer in the ANSWER file. Hopefully it is on the Clipboard . . . this would not be the best time for a power failure.

26. Switch to the other file and move "hare brush" into this file.

> There is now one (1), and only one, hare brush anywhere on the Desktop: The Q and A file no longer contains a hare brush and neither does the Clipboard. For important information this last procedure can be a little risky. I recommend that you copy information to and from the Clipboard. Sometimes things can go to the Clipboard . . . and never return. If you retain a copy in your original file you can repeat the process.

27. Now you are on your own. Pair up the remaining questions and answers.

28. After the last set, add your favorite riddle.

29. Save your work.

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activity 10 INDENTING and FINDING AND REPLACING TEXT

In this activity you will try several more word processor features. You will work with a file containing the first part of a student behavior contract. This model is used by team leaders and the assistant principal at a local middle school. You will complete this document, indenting expected behaviors and consequences, setting markers, and adjusting for both single and double spacing.

By using generic terms throughout (e.g., HIM/HER, STUDENT) this file will serve as the student contract template. You will then use the find and replace command to quickly customize this contract for a particular student.

PART 1 : ADDING A WORD PROCESSOR FILE FROM THE DATA DISK

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. Get files from current disk — press RETURN
4. Select : --> STUDENT CONTRAC — press RETURN

5. A student behavior contract has been started.

6. Zoom to note the margin and characters per inch settings:

```
File: STUDENT CONTRAC          REVIEW/ADD/CHANGE          Escape: Main Menu
--------Left Margin:  0.5 inches
--------Right Margin:  0.2 inches
--------Bottom Margin:  0.5 inches
--------Chars per Inch: 8 chars
"BEHAVIORAL / ACADEMIC CONTRACT


.                              .
(student name)
.                              .
(date)

This Contract has been drawn up because STUDENT has been

Expected Behaviors are:
```

7. Note the caret symbols at the top of the screen. Position the cursor on each one. Do you understand what will appear at the top of this contract when it is printed? Another way to print a solid line would be to use the underline key.

PART 2 : ADJUSTING FOR BOTH SINGLE AND DOUBLE SPACING

The first part of this contract is to be double spaced. The "expected behaviors and consequences" are to be single spaced.

1. Move the cursor to the line under "(date)."

2. Press open-apple O (for options).

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3. Type : DS (for Double Space) press RETURN

4. Note the highlighted bar at the top of the "Option's Menu. DS will now appear as the last setting on that line.

5. Press ESC to return to the REVIEW/ADD/CHANGE screen.

6. Zoom to view the "----------Double Space" marker on the screen.

7. Move the cursor to the line above "Expected behaviors are:"

8. Set the Single Space printer option marker here.

9. After you ESC back to the REVIEW/ADD/CHANGE screen, zoom in to note how AppleWorks indicates the varied spacing for this portion of the contract.

PART 3 : WORKING WITH WORD WRAPAROUND AND INDENTING

You will type the remainder of this contract. While typing the following paragraph, do not press RETURN at the end of a line. As you type AppleWorks will adjust the spacing. Words at the end of a line will not be split, but "wrapped" to the next line.

1. Move the cursor to the end of the first line ("STUDENT has been") and complete this section:

This Contract has been drawn up because STUDENT has been held back in two seventh grade classes this term due to poor skills and performance. STUDENT has not done all the work assigned to HIM/HER this term. This contract is an attempt to stop that behavior.

Next we will set the Indenting printer option for all numbered items. With this setting the first line of each numbered paragraph will remain at the left margin. Subsequent lines of text in that paragraph will automatically indent 4 spaces to the right. This is called a "hanging paragraph."

2. Move the cursor to the line under "Expected Behaviors are:".

3. Press open-apple O

4. Type : IN (for Indent) press RETURN

5. For Chars: type 4 press RETURN

6. Press ESC to return to the REVIEW/ADD/CHANGE screen.

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7. Enter the following text. As you type, do not press RETURN UNTIL you are through with a sentence and ready to move to the next item. Press RETURN twice to leave a blank line between items.

8. Type the following text:

Expected Behaviors are:

1. STUDENT will complete all work assigned to HIM/HER during each of HIS/HER seven class periods.

2. STUDENT will complete all homework in each of HIS/HER classes. "Homework" is both work not completed during class time and specific work assigned as homework.

3. STUDENT will turn in HIS/HER homework at the appropriate time.

4. STUDENT will carry HIS/HER Carry Card to all classes, present it to the teacher and pick it up signed after class.

5. STUDENT will take the card home and show it to a parent that day.

Consequences for not meeting contract expectations:

1. STUDENT will remain at school to finish any class work not completed for that day.

2. Loss of the card means staying after school that day for ? hours.

3. Failure to stay after school will mean ? day in-school suspension on the next school day.

9. After typing the last consequence, move the cursor to a blank line.

10. Press open-apple O and select : IN.

11. For number of characters select : 0.

12. Type the concluding paragraph of this contract. Note that all further text now wraps at the left margin.

STUDENT will remain on this contract for the next six weeks. During that time meetings will be scheduled to discuss STUDENT's progress.

_____ _____

Student Administrator

_____

Parent

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PART 4 : SETTING MARKERS IN A WORD PROCESSOR FILE

Now that the contract template has been entered, you will set two printer option "markers." Later, using the FIND command, you can quickly move the cursor to these markers and then insert specific information for each student -- such as time to be spent after school and number of days to be spent in in-house suspension.

1. Position the cursor under the second consequence, "Loss of the card means staying . . ."

2. Press open-apple O.

3. Type: SM (for SET A MARKER) press RETURN

4. For number, type: 1 press RETURN

5. ESC to the REVIEW/ADD/CHANGE screen.

6. Position the cursor under the third consequence.

7. Set a second marker here. You can assign this marker any number -- even the number 1.

8. ESC to the REVIEW/ADD/CHANGE screen.

PART 5 : CHANGING A WORD PROCESSOR FILENAME

1. Save this word processed template on your data disk. It will now serve as a generic student contract.

   The student contract on the Desktop will now be customized for Susan B.

2. Press open-apple N (for NAME CHANGE).
   The name of the file, "STUDENT CONTRAC," will appear at the bottom of the screen, along with the insert cursor.

3. Press open-apple Y to erase the current filename.

4. Type : CONTRAC.SUSAN B press RETURN
   Note the 15 character limit for a filename.

PART 6 : FINDING AND REPLACING TEXT

This file will now be changed to contain information for Susan B. When saved, your data disk will contain both versions -- the contract template and Susan's.

REMEMBER: Each time you use the Replace command, the cursor will need to be positioned at the beginning of the file; the search process always begins from the CURRENT cursor position and continues to the end of the document.

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1. Use the "ruler" (open-apple 1) to move to the top of the file.

2. Press open-apple R and work with Case sensitive text.

3. For replace what? type: STUDENT press RETURN

4. For replace with what? type: Susan press RETURN

5. For replace? select: One at a time press RETURN

6. Change each occurrence of STUDENT to "Susan."

7. Press Space Bar when done and move back to the top of the file.

8. Use the REPLACE command to change all occurrences of HIM/HER to her. Be sure to use lower case when typing "her."

9. Use the REPLACE command to change all occurrences of HIS/HER to her. To speed up this process up, have all replacements done at once.

10. Move the cursor to the top of the file, switch to the overstrike cursor and type Susan Brown on the line above "(student name)."

11. Switch back to the insert cursor.

PART 7 : USING THE FIND COMMAND

We set two markers to quickly move to a certain place in this file. We will now use this command and then type the appropriate consequences.

1. Move the cursor to the top of the file.

2. Press open-apple F (to FIND).

3. Note the bottom of the screen.

> With the FIND command we can locate specific text, pages, markers, case sensitive text and options for printers. Remember, the cursor must be above whatever you are trying to find.

4. Select : Marker press RETURN

5. For Marker number? type: 1 press RETURN

6. The first marker is now highlighted. Since we will be working in this area, press RETURN. The process for "Finding" markers has been turned off.

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7. For hours after school, replace the "?" with "two."

8. For number of days for in-house suspension, type "one."

9. Move the cursor to the top of the file. We will examine this FIND command a bit further.

10. Press open-apple F and select options for printer. (Have you figured out that you can select a menu item by merely typing the first letter of the option?)

11. The screen should display the now familiar Option's Menu. Note what is displayed in the highlighted status line at the top of the menu:

```
                              FIND PRINTER OPTIONS
Option:                 UJ: Unjustified     GB: Group Begin      BE: Boldface End
                        CN: Centered        GE: Group End        +B: Superscript Beg
PW: Platen Width        PL: Paper Length    HE: Page Header      +E: Superscript End
LM: Left Margin         TM: Top Margin      FO: Page Footer      -B: Subscript Begin
RM: Right Margin        BM: Bottom Margin   SK: Skip Lines       -E: Subscript End
CI: Chars per Inch      LI: Lines per Inch  PN: Page Number      UB: Underline Begin
P1: Proportional-1      SS: Single Space    PE: Pause Each page  UE: Underline End
P2: Proportional-2      DS: Double Space    PH: Pause Here       PP: Print Page No.
IN: Indent              TS: Triple Space    SM: Set a Marker     EK: Enter Keyboard
JU: Justified           NP: New Page        BB: Boldface Begin
```

We have been using CONTROL B to print boldface, and CONTROL L to designate underlining. These printer options can also be set from within the Options Menu. However, this method involves several more keystrokes to obtain the same results.

Using underlining and boldface codes within the Options Menu is very useful when you want to systematically find these carets in a word processed document. Try this:

12. For option, type: UB (Underline Begin) press RETURN

13. You will not have to press ESC; the FIND routine will immediately highlight the first occurrence.

14. Use this command to locate each occurrence of an "underline begin" marker.

15. Move the cursor to the top of the file and try a few variations of this FIND command.

16. Press open-apple F and select :Page
Any idea as to why the program can't find a page number?

17. Try again, but this time run a page calc (open-apple K) first.

18. When done, save Susan's file.

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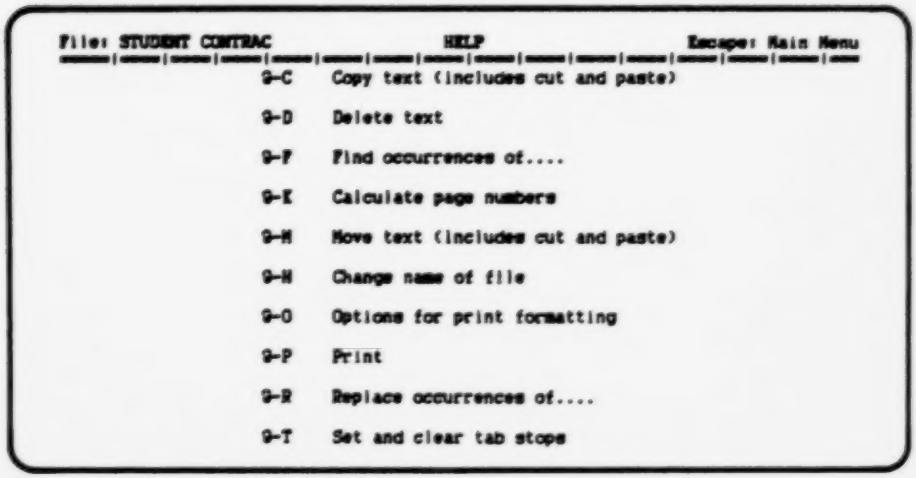
PART 8 : REVIEWING WORD PROCESSOR COMMANDS

We have now examined most of the word processor features. You do not have to try to remember all the commands. A lamenated card listing the various AppleWorks commands is provided with each program. And a "Help Menu" is also available for viewing the various commands on screen.

1. Press open-apple ?
2. A list of commands will appear on the screen.


File: STUDENT CONTRAC
HELP
Escape: Main Menu
O-C Copy text (includes cut and paste)
O-D Delete text
O-F Find occurrences of....
O-I Calculate page numbers
O-M Move text (includes cut and paste)
O-N Change name of file
O-O Options for print formatting
O-P Print
O-R Replace occurrences of....
O-T Set and clear tab stops

3. Use the down arrow key to view the entire list.
4. When done, press ESC to return to the REVIEW/ADD/CHANGE screen.
5. A reminder: use open-apple D to delete printer options from a word processor file. Delete the second marker from the STUDENT CONTRAC file.
6. To further indent the five expected behaviors and the three consequences, change the left margin setting for these eight items to one inch.
7. Leave the left margin setting for the two headings ("Expected Behaviors are:") and ("Consequences for not meeting contract expectations:") set at one half inch.
8. Save this file.

PART 9 : PRINTER TYPE SIZES AND STYLES

When your printer is printing at 10 characters per inch, the print head moves to the right exactly 1/10 of an inch after each character it types, regardless of the width of the character. With proportional print, the print head moves a variable distance,

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depending on the width of the character. In other words, the print head moves further after typing the letter "w" than it does after typing the letter "l."

> Note: You can change the value for Characters per Inch at the beginning of any paragraph, but AppleWorks will not let you change the number of characters (or change to proportional print) in the middle of a paragraph.

1. Move to a computer with a printer and add the **STUDENT CONTRAC** file to the desktop.
2. Before printing, move the cursor under expected behavior #3.
3. From the Option Menu, select P1 (for Proportional Print -1).
4. ESC to the REVIEW/ADD/CHANGE screen, move the cursor under expected behavior #5 and return the setting to 10 characters per inch.
5. Print this file and note the difference between proportional print and 10 characters per inch print.
6. Experiment with proportional -2 print.
7. Save your work.

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FILE:

NAME	GRADE	HOMEROOM	BIRTHDATE	G.P.A.
COOK	8	SMITH	AUG 17 72	3.3
FINCH	6	BROWN	SEP 22 75	2.6
JONES	6	HALL	JUN 14 74	3.1
MILLER	7	ELLIS	JAN 10 73	4.0
PARKER	8	SMITH	FEB 20 72	2.7

THE DATA BASE

PART 4

THE DATA BASE

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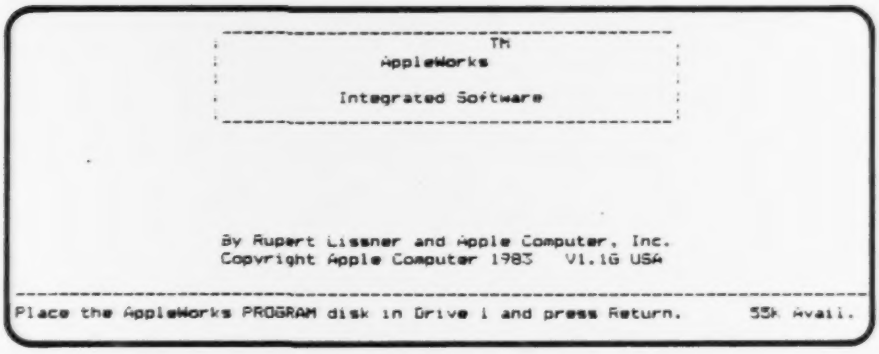
HOW TO LOAD THE APPLEWORKS™ PROGRAM

The AppleWorks program is split into two parts:

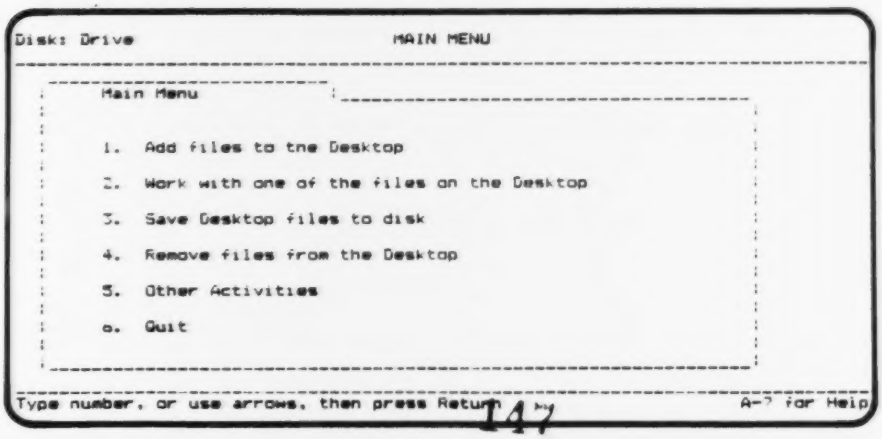
Part 1, the "AppleWorks Startup" is on one side of the disk.

Part 2, the "AppleWorks Program" is either on the back side of the same disk or on a separate disk.

1. Put the AppleWorks Startup disk in drive 1.
2. Put the data disk, that came with this packet, in drive 2.
3. Turn on the monitor.
4. Turn on the computer.
5. If it is already on, hold down the open-apple and CONTROL keys, and tap the RESET key.
6. The COPYRIGHT SCREEN should appear:


TM
AppleWorks
Integrated Software
By Rupert Lissner and Apple Computer, Inc.
Copyright Apple Computer 1983 V1.1G USA
Place the AppleWorks PROGRAM disk in Drive 1 and press Return.
55k Avail.

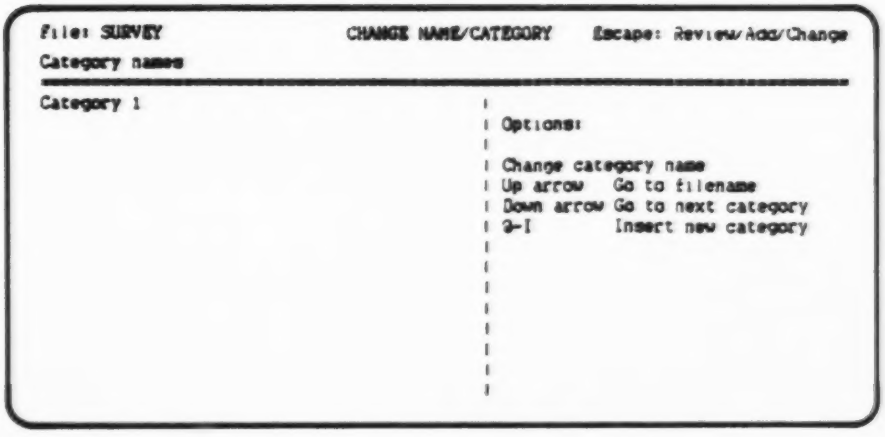
7. Remove the Applewdrks Startup disk from drive 1.
8. Insert the Program disk in drive 1, and press RETURN.
9. Type today's date using the form shown on the screen.
10. Press RETURN.
11. The AppleWorks MAIN MENU should now be on the screen:


Disk: Drive
MAIN MENU
Main Menu
1. Add files to the Desktop
2. Work with one of the files on the Desktop
3. Save Desktop files to disk
4. Remove files from the Desktop
5. Other Activities
6. Quit
Type number, or use arrows, then press Return
A-? for Help

activity 1 A DATA BASE OVERVIEW

PART 1 : CREATING A DATA BASE

1. Begin at the Main Menu.
2. Select: 1. Add files to the Desktop press RETURN
3. Select: 4. Make a new file for the Data Base press RETURN
4. Select: 1. From scratch press RETURN
5. Type the name of your new file: SURVEY press RETURN
6. The CHANGE NAME/CATEGORY menu should be on the screen:



PART 2 : ENTERING CATEGORY NAMES

When setting up a new data base, category names are entered first. For this activity we will enter categories that could be used to survey workshop participants.

1. Press down the CAPS LOCK key. All entries will be upper case.
2. Note the cursor on "Category 1." Category names are entered here.
3. Use open-apple Y to erase this prompt statement.

> TO CORRECT TYPING ERRORS:
>
> Use the arrow keys to move between category names.
>
> Use open-apple Y to erase characters to the end of the line.
>
> Use the DELETE key to erase characters left of the cursor.

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4. Type the following categories. Press RETURN after each category name.

LAST NAME
FIRST NAME
OREGON BORN ?
YEARS IN OREGON
BIRTHDATE
TYPING
TEAM
ANIMAL
FOOD
SPORT
TV PROGRAM

5. After typing TV PROGRAM, press RETURN

The AppleWorks data base can have up to 30 categories. We have entered 11 and will now begin the second part of the set-up process.

6. Press the ESC key.

PART 3 : ENTERING RECORD INFORMATION

After completing category names, information (data) for each category is entered. A **CATEGORY** is one piece of information about a subject (e.g., a first name, address, favorite food). A **RECORD** is all the information about that subject (e.g., a person, an item).

1. Press the SPACE BAR to begin entering record information.

The category headings will be listed on the screen.

2. Type YOUR response after a category. Press RETURN to confirm the entry.

   a. After "**OREGON BORN?**" indicate whether you were born in Oregon by typing either YES or NO.

   b. After "**YEARS IN OREGON**" type the number of years you have lived in Oregon.

   c. After "**BIRTHDATE**" type someone's birthdate. Try typing several variations: 1/3/44, 1-3-44.

   d. After "**TYPING**" describe your typing ability - in one word.

   e. After "**TEAM**" type your favorite sports team.

   f. For the next 4 categories, name your favorite . . .

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3. Press RETURN after entering your favorite TV program. A blank record will appear.

4. Have your partner complete this second record.

5. Again press RETURN after TV PROGRAM.

The screen should display the blank Record 3 of 3. The data base now contains category names and two completed records.

PART 4 : VIEWING DATA BASE RECORDS

Thus far we have been working with the data base in the single-record layout: viewing ALL information for one record.

Another way to view an AppleWorks data base is in the multiple-record layout: having information for many records on the screen.

1. Place the cursor on the LAST NAME entry.

2. Press open-apple Z (To ZOOM).

3. Use the up arrow key to view records one and two on screen.

Both records are now displayed HORIZONTALLY in columns and rows. Again press open-apple Z. Now one record is displayed on the screen. Open-apple Z allows you to switch back and forth between single- and multiple-record screens.

PART 5 : MOVING THE CURSOR

1. To move the cursor to the next column tap the TAB key. Place the cursor in the column containing first names.

2. Use the TAB key to place the cursor in each column on the first row.

3. Move the cursor to a previous column by pressing the open-apple and TAB key.

4. Move the cursor up or down rows with the UP or DOWN arrow keys, or the RETURN key.

5. To move the cursor between the letters within a column use the RIGHT or LEFT arrows.

PART 6 : EDITING INFORMATION

1. Move the cursor to a FIRST NAME category. Erase all letters to the end of the column by pressing open-apple Y. Reenter another first name.

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2. Change a last name by erasing the characters within the column with the DELETE key.

3. Erase a row of information by pressing open-apple D and RETURN. All information for this record has been permanently removed.

PART 7 : ADDING A DATA BASE FILE TO THE DESKTOP

This two-record data base is too small for observing the next set of features. We will work with a data base that was created by teachers in another AppleWorks workshop.

1. ESC to the Main Menu.

2. Select : 1. Add files to the Desktop. press RETURN

3. Select : 1. Get files from the current disk press RETURN

4. Select : -> TEACHER SURVEY press RETURN

5. The following data base should be on the screen:

File: TEACHER SURVEY REVIEW/ADD/CHANGE Escape: Main Menu

Selection: All records

LAST NAME	FIRST NAME	OREGON BORN ?	YEARS IN OREGON	BIRTHDATE
COOPAN	JEAN	NO	17	Apr 30 50
ALDER	MICHELE	NO	12	Jun 9 51
MUDJIMBA	SAMANTHA	YES	46	Nov 16 39
MANLEY	BILL	NO	6	Apr 8 51
CRAMER	DONALD	NO	15	Feb 18 42
DUSK	MARLENE	YES	46	Jun 27 39
DAYBORO	PEGGY	YES	34	Oct 14 50
MCBEAN	PAT	NO	42	Mar 18 41
MILLICAN	MARLENE	YES	51	Apr 14 24
WINGER	WILLA	NO	30	Apr 4 50
GILLS	FRANK	NO	23	Aug 17 31
TARRA	DAVE	NO	20	Jul 2 39
JARRAD	JOHN	NO	42	Jun 14 32
LATTA	FRED	NO	36	Sep 4 43
James	KAREN	NO	11	Oct 26 37

Type entry or use ∂ commands ∂-? for Help

The categories you set up in PARTS 1 through 3 were also used for this data base.

6. Before starting PART 8, practice moving the cursor between rows and columns. Switch between multiple-record and single-record layouts.

NOTE: Records scroll off the top of the screen as the cursor moves down. However, record information does NOT scroll left or right.

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Data base information can be rearranged using the open-apple A command.

Like the spreadsheet, data base records can be organized in:

* ALPHABETICAL ORDER
* NUMERIC ORDER
* CHRONOLOGICAL ORDER

To arrange a data base, first move the cursor to the category by which you want to arrange the file.

With the spreadsheet, the cursor would next be placed above or below the information to be sorted. With the data base, the cursor can be anywhere in the selected column. All records are included in the sort.

1. Switch to **MULTIPLE-RECORD** layout.
2. Note the information in JEAN COORAN'S record. We will keep an eye on this teacher as the data base is rearranged.
3. To alphabetize all records in the data base file by LAST NAME, first move the cursor to the column: LAST NAME.
4. Press open-apple A (to ARRANGE).
5. Select the arrangement order : From A to Z press RETURN
6. ALL records should now be arranged alphabetically, from A to Z, by last name.
7. Move the cursor through the 39 records to check:

File: TEACHER SURVEY REVIEW/ADD/CHANGE Escape: Main Menu

Selection: All records

LAST NAME	FIRST NAME	OREGON BORN ?	YEARS IN OREGON	BIRTHDATE
ALDER	MICHELE	NO	12	Jun 9 51
AYRES	JULIE	NO	12	Jan 14 45
BLACKBIRD	SARA	NO	7 1/2	Oct 18 57
COALBAGGIE	SALLIE	NO	20	Mar 17 50
cook	PHYLLIS	YES	37	Nov 8 46
COORAN	JEAN	NO	17	Apr 30 50
CRAMER	DONALD	NO	15	Feb 18 42
DAYBORD	PEGGY	YES	34	Oct 14 50
DUSE	MARLENE	YES	45	Jun 27 39
ELK	KATHY	NO	14	Apr 23 49
FISHER	HARRY	NO	13	Nov 4 37
GILLS	FRANK	NO	23	Aug 17 31
GLEASON	ZEKE	NO	37	Dec 18 35
HAZELBROOK	DON	NO	14	Sep 22 32
HITCHMAN	ROSE	NO	5	Feb 27

Type entry or use 9 commands 9-? for Help

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NOTE: ALL information for Jean (her name, birthdate, favorite food, etc) was reordered in this sort.

Note the entries, Phyllis cook and Karen James. Although both last names were entered in lower case, they were placed in the correct order when the file was sorted. AppleWorks does not distinguish between upper- and lower-case letters.

8. Move the cursor to the second column. Use open-apple A to arrange all records in this file by FIRST NAME, from Z to A.

9. To find Jean's record press open-apple F (to Find).

10. Type : COORAN press RETURN

Does Jean's record still contain all her information? Check the single-record layout.

11. Press ESC to return all records to the screen.

12. Move the cursor to the third column and arrange this file from A to Z according to who was born in Oregon. Note the number of "immigrants."

13. Move the cursor to the fourth column and arrange this file from 0 to 9. Note the range of "newcomers vs. oldtimers."

Note Sara Blackbird's record. Although she has lived in Oregon 7 1/2 years she appears last in the file.

14. Move the cursor to this entry. Erase this number with open-apple Y and enter 7.5 press RETURN

15. Again arrange this file from 0 to 9 and note Sara's record. Those little details !

16. Now arrange this file in chronological order by BIRTHDATE.

NOTE: If you use the word "DATE" or "TIME" in a category title, the program will provide additional arrangement order criteria.

Note what has happened to the records in which the teachers did not choose to include the year they were born. (No hiding in this data base!)

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PART 9 : CHANGING THE SCREEN LAYOUT

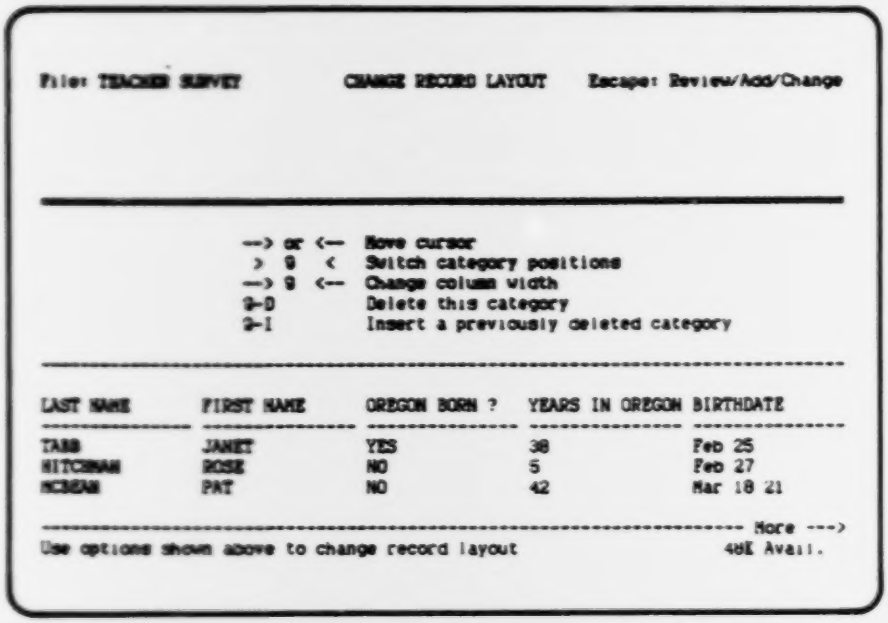
Unlike the spreadsheet, data base columns do not scroll off the screen so more information can be viewed.

We entered 11 categories, but only five are displayed on the multiple-record screen. One way to view more columns would be to decrease the width of each column. The default column width is 15 characters. To change that setting we will use the data base version of the open-apple L command.

1. Begin in the multiple-record layout.

2. Press open-apple L (for LAYOUT).

The CHANGE RECORD LAYOUT menu will be on the screen:



NOTE: The top of the screen contains information for moving the cursor, switching, deleting or inserting categories, and changing the column width.

NOTE: The bottom portion of the screen displays three records. These records can not be changed now, but serve as examples of how the data base will appear when viewed on the REVIEW/ADD/CHANGE screen.

First we will work with the column widths.

3. With the cursor under the **LAST NAME** category title, hold down the open-apple key and TAP the LEFT arrow key.

4. Do this four times. Note the column width has decreased and the **FIRST NAME** heading has moved closer.

5. Use either the Tab or RIGHT arrow key to move the cursor under the **FIRST NAME** category title.

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6. Again use the open-apple and LEFT arrow keys to decrease this column four characters.

7. Repeat this process, decreasing the column widths of the next five columns.

   As columns become narrower, more categories will appear on the screen -- representing the new layout for the entire data base.

8. When you have completed the layout changes, return to the REVIEW/ADD/CHANGE screen. Press the ESC key twice.

Seven columns should now be displayed on the screen:

> By decreasing the column width, all information in some categories may not be displayed. Note Pat McBean's favorite team. Adjusting column widths requires some "fiddling" to get necessary information in each column displayed in the multiple-record layout.
>
> NOTE: Changing the multiple-record layout does not affect how information is displayed on the single-record screen.

A second way to alter screen layout would be to place certain categories in a special layout "buffer." They would no longer appear on the screen -- but could be brought back at any time.

1. Begin in the multiple-record layout.

2. Press open-apple L (for LAYOUT).

3. Place the cursor on the category title FIRST NAME.

4. Press open-apple D (to DELETE).

> The open-apple D command <u>within</u> the LAYOUT option will send all the information in that category to a "buffer."
>
> The open-apple D command on the REVIEW/ADD/CHANGE screen WILL PERMANENTLY DELETE the record from memory . . .
>
> Open-apple I returns categories to the screen.
>
> When a file is saved, categories that have been deleted from screen layout will not appear next time the file is added to the Desktop. However, they can still be returned to the screen through open-apple I.

5. Place the cursor on the category title OREGON BORN.

6. Press open-apple D.

7. Use the open-apple D command to place BIRTHDATE and TYPING in the layout "buffer."

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8. To see the categories that have been stored in this "buffer," press open-apple I (to INSERT).

By pressing RETURN the highlighted category would again appear on the screen.

9. Press ESC.
We will not insert any of these categories.

10. Return to the REVIEW/ADD/CHANGE screen.

Arranging records by favorite TEAM, ANIMAL, FOOD or SPORT can now be viewed on the screen.

PART 10 : SELECTING RECORDS : AN OVERVIEW

Thus far we have been working with all 39 records in this file. There is a data base feature which allows you to select CERTAIN records to view on screen, or appear in a printed report.

Open-apple R is used to set up record selection rules. We will write several record selection rules, but first, read the following overview on how these rules are set up:

* Use Open-apple R (RECORD SELECTION) to begin.

* Use the cursor to highlight the CATEGORY that will determine which records are to be selected. Every category will be available on the screen -- even those in the layout "buffer."

* Use the cursor to highlight a COMPARISON descriptor (such as "equals," "is less than," "begins with," etc.)

* Type comparison information (such as "DUCKS," "100," "Smith," etc.)

* Press ESC if the record selection RULE is completed.

* Or, choose a second CONNECTOR (such as "and" or "or") and continue to describe the record selection rule.

* To return all records to the screen, again press open-apple R.

* This feature is available for viewing selected records on the screen, and when printing reports.

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PART 11 : SELECTING RECORDS: A "GUIDED TOUR"

In the following exercise, we will use the TEACHER SURVEY data base to answer ten questions. The questions are listed first. How to set up each record selection rule has been provided.

* Each time you want to search for another set of records, begin with open-apple R.

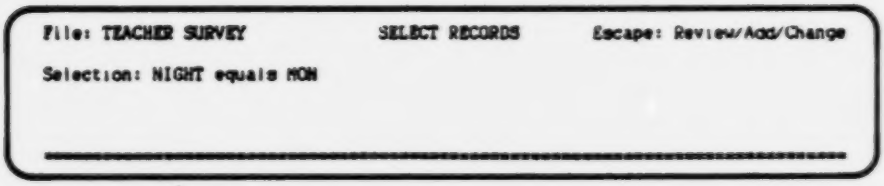
* All categories will not appear on the multiple-record screen. Sometimes it will be necessary to switch to the single-record screen to examine selected records.

Select records for the following questions:

1. How many people attended the MONDAY night class?

1.	Press open-apple R.		
2.	Highlight:	NIGHT	press RETURN
3.	Highlight:	equals	press RETURN
4.	Type:	MON	press RETURN

NOTE THE SELECTION RULE AT THE TOP OF THE SCREEN:



5. Press ESC.
   "And" or "or" connectors are not needed.

6. Switch to the single-layout screen.

7. Use the open-apple AND the up or down arrow key to examine each record that was selected, noting which night these people attended class.

2. How many people had last names beginning with the letter M?

1.	Press open-apple R.		
2.	For select all records ? select : No		press RETURN

NOTE THE SELECTION RULE AT THE TOP OF THE SCREEN

3.	Highlight:	LAST NAME	press RETURN
4.	Highlight:	begins with	press RETURN
5.	Type:	M	press RETURN
6.	Press ESC.		

7. Switch to the multiple-record layout screen to view the eight records.

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3. How many people were born in Oregon?

1. Press open-apple R. Select : No press RETURN

Note: you can "highlight" by moving the cursor with arrow keys, or by typing the category number.

2. Highlight: OREGON BORN ? press RETURN
3. Highlight: equals " "
4. Type: YES " "
5. Press ESC. How many ? _____

4. How many people in this survey have lived in Oregon less than 10 years?

1. Press open-apple R.
2. Highlight: YEARS IN OREGON (you know what to do)
3. Highlight: is less than
4. Type: 10
5. Press ESC How many ? _____

5. Of those folks born in Oregon, how many are Duck fans?

1. Press open-apple R.
2. Highlight: OREGON BORN ?
3. Highlight: equals
4. Type: YES

5. Highlight: AND
6. Highlight: TEAM
7. Highlight: equals
8. Type: DUCKS
9. A second connector is not needed, so press ESC.
How many ? _____

6. How many last names are in the range, A through F?
1. Highlight: LAST NAME
2. Highlight: begins with
3. Type: A
4. Highlight: THROUGH
5. Type: F
6. Press ESC.
7. Use open-apple A to arrange this list by last name. How many ? _____

7. How many people were not Duck or Beaver fans?
1. Highlight: TEAM ; does not contain
2. Type: DUCKS
3. Highlight: AND
4. Highlight: TEAM ; does not contain
5. Type: BEAVERS
6. ESC. How many ? _____

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8. How many people liked dogs ?
   1. Highlight: ANIMAL ; equals
   2. Type: DOG
   3. ESC. How many ? _____

   Note what is displayed in the ANIMAL column.

9. Let's try that again . . .
   1. Highlight: ANIMAL ; contains
   2. Type: DOG

   Note what is now displayed in the ANIMAL column.

> Categories containing anything other than D O G were not selected in the first search. The descriptor "EQUALS" does a literal letter for letter comparison. Either upper or lower case will be accepted.
>
> When the descriptor "CONTAINS" was used, records listing either dog or dogs were highlighted. If "doggie" had been entered in that category, it would have appeared also.

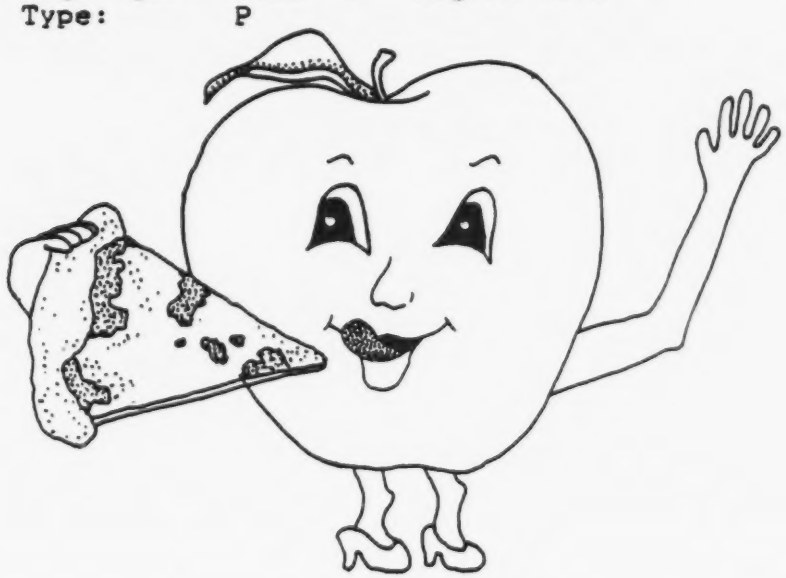
10. What are some of the food favorites?
    1. Highlight: FOOD ; contains
    2. Type: PIZZA

    3. Highlight: or

    4. Highlight: FOOD ; contains
    5. Type: CHOC

    6. Highlight: or

    7. Highlight: FOOD ; begins with
    8. Type: P



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PART 12 : WRITING YOUR OWN SELECTION RULES (OPTIONAL)

This section has been included as an optional activity. A data base file containing the 1984 Olympic winners is available for you to practice designing your own selection rules. You could take time now, or return to this section after examining data base printing features.

Before setting up a new data base, teachers in my classes spend a LOT OF TIME determining WHAT information they want, and how the selection rules would be used.

1. Begin at the Main Menu.

2. Select: 1. Add files to the Desktop

3. Select: 1. Get files from: the current disk

4. Select: -> OLYMPIC MEDALISTS

   You should now have a copy of the 1984 Olympic winners: their names, countries, and standing for each event.

5. Use open-apple Z and switch to the single-record layout.

6. Use open-apple 9 to quickly move to the end of this file.

   How many RECORDS are in this file ? _____

7. Use open-apple 1 to move to the beginning of this file.

8. Now design your own RECORD SELECTION RULES.

   * Try different COMPARISON options (EQUALS, CONTAINS ...)

   * Work with the different CONNECTORS (AND, OR, THROUGH)

   Which connector limits your possible record choices ? _____
   Which connector will increase the possibilities ? _____

9. Design a few (interesting ?) questions that could be answered using the information in this data base file.

10. Following the pattern I set-up in PART 11, write the RECORD SELECTION RULES that would answer your questions.

11. Test your SELECTION RULES with the data base.

    Find anything interesting?

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activity 2 PRINTING SINGLE RECORDS

Once a data base has been created, information can be printed as single-records (using the LABELS option), or in the multiple-record format (with the TABLE report option). Printing data base records can be a more involved process than printing either word processor or spreadsheet files.

For this activity we will set up a very simple data base and examine the basic steps for printing single records. We will set the paper size for one inch by three and a half inches, and organize the layout so that information will fit on mailing labels.

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Kilroy Tanker School District 2802

PART 1 : CREATING A DATA BASE

1. Begin at the Main Menu.
2. Select: 1. Add files to the Desktop — press RETURN
3. Select: 4. Make a new file for the Data Base — press RETURN
4. Select: 1. From scratch — press RETURN
5. Type the name of your new file: LABELS — press RETURN
6. Type the following categories :

   LAST NAME (REMEMBER: use open-apple Y)
   FIRST NAME
   STREET
   CITY
   STATE
   ZIP
   SCHOOL

7. Press ESC when categories have been entered.
8. Press the SPACE BAR to begin entering information.
9. Enter your name and address.
10. Press RETURN after typing your school.
11. Have your partner complete the second record.

    We will only have two records in this file.

12. Press open-apple Z to view the two records in the multiple-record layout.

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PART 2 : DUPLICATING A RECORD

First we will use the AppleWorks COPY feature to duplicate the two address records. Then we will organize how the labels are to be printed.

1. Place the cursor on the first letter of your last name.
2. Press open-apple C (to COPY).
3. Select : current record.
4. For how many copies : type: 10 press RETURN

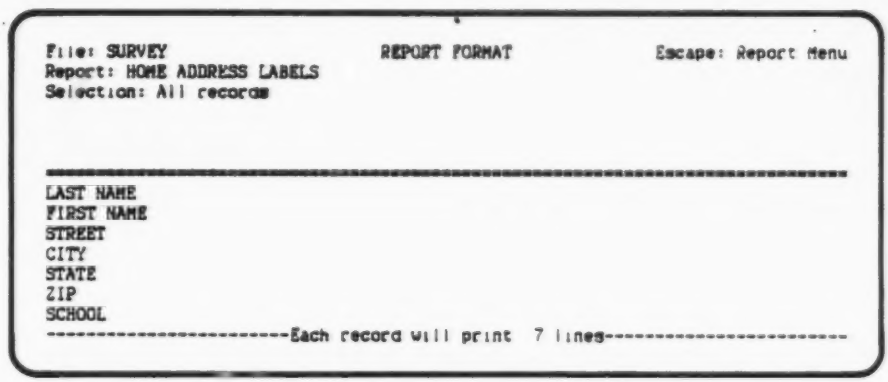
You should now have a data base containing 12 records.

5. Move the cursor to the row containing your partner's record, and repeat steps 2 through 4.

PART 3 : CREATING A "LABEL" FORMAT

1. Press open-apple P (to Print).
2. Select : 3. Create a new "labels" format press RETURN
3. For report name, type : HOME ADDRESS LABELS press RETURN

The seven categories will be listed vertically on the screen:



5. With the cursor on the "L" of LAST NAME, hold down the open-apple key and tap the right arrow key to move this category to the right.
6. Use the open-apple AND arrow keys to move the LAST NAME category down and next to FIRST NAME.

TIP: With the cursor on the L of LAST, press open-apple J (to JUSTIFY). The "less than symbol" (<) will appear.

When printed FIRST and LAST names will line up "side by side" (justified). AppleWorks automatically includes a space between categories that have been justified.

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7. Next place the cursor on S of STATE.

8. Position this category next to CITY.

9. With the cursor on the S, press open-apple J.

10. Position the ZIP category on the line beneath CITY<STATE.

11. Move the cursor to the S of SCHOOL and press open-apple D. The name of your school will not appear on this mailing label. This CATEGORY has been placed in the print "buffer".

    If needed, open-apple I would bring this category back onto the screen.

> NOTE: The screen indicates how many lines will be printed on each label. THIS IS IMPORTANT INFORMATION.

PART 4 : SETTING DATA BASE PRINTER OPTIONS

Like the word processor and spreadsheet, the data base program has default printer settings. If we intend to do something SPECIAL -- like print 1 inch by 3 1/2 inch labels -- we will need to change some of these settings.

1. Press open-apple O (for Printer Options).

NOTE: This option menu is very similar to the spreadsheet menu:

```
File: SURVEY                    PRINTER OPTIONS          Escape: Report Format
Report: HOME ADDRESS LABELS
-------------------------------------------------------------------------------

-------Left and right margins--------      ------Top and bottom margins-------
PW: Platen Width          8.0 inches      PL: Paper Length         11.0 inches
LM: Left Margin           0.0 inches      TM: Top Margin            0.0 inches
RM: Right Margin          0.0 inches      BM: Bottom Margin         0.0 inches
CI: Chars per Inch        10              LI: Lines per Inch        6

    Line width            8.0 inches          Printing length      11.0 inches
    Char per line (est)   80                  Lines per page       66

          --------------------Formatting options--------------------
          SC: Send Special Codes to printer                        No
          PD: Print a Dash when an entry is blank                  No
          PH: Print report Header at top of each page              Yes
          OL: Omit Line when all entries on line are blank         Yes
          KS: Keep number of lines the Same within each record     Yes



-------------------------------------------------------------------------------
Type a two letter option code                                    48K Avail.
```

2. Note the "Lines per page" setting: an 11-inch page contains 66 lines. The default PL setting is 11.0 inches.

3. Type : PL (for Page Length). press RETURN
4. For inches, type: 1 press RETURN

5. Now note the new "Lines per page" setting: an one-inch label can contain only 6 lines.

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6. Type : PW (for Platen or Page Width).
7. For inches, type: 3.5

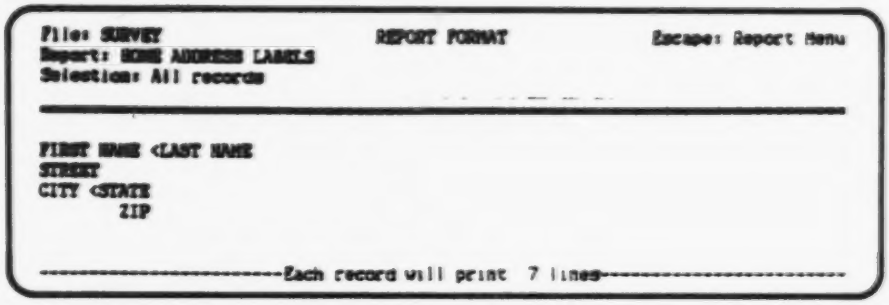
8. Type : LM (for Left Margin)
9. For inches, type: .5

10. Type : PH

NOTE: The command to turn ON / OFF the page header will switch to NO.

11. The printer options for a label printout have been set. Press ESC.

12. Pay special attention to the line indicator on the label screen:



NOTE: The number of lines you plan to print: "Each record will print 7 lines" MUST agree with the number of lines that can actually fit on a one-inch label.

With the current setting, each label will print seven lines before scrolling to the next label. However, one-inch labels can only contain six lines -- any number of lines more or less will cause printing problems (e.g., information will be split between labels).

The "record length" must equal "lines per page".

13. Place the cursor on one of the blank lines below ZIP

14. Press open-apple D to delete one line. The line indicator should now show "Each record will print 6 lines." Both settings now agree.

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PART 5 : PRINTING LABELS

Once printer options have been set, the data base can be printed. AppleWorks provides a very nice feature by allowing you to "print to the screen". Each record can be examined before sending anything to the printer.

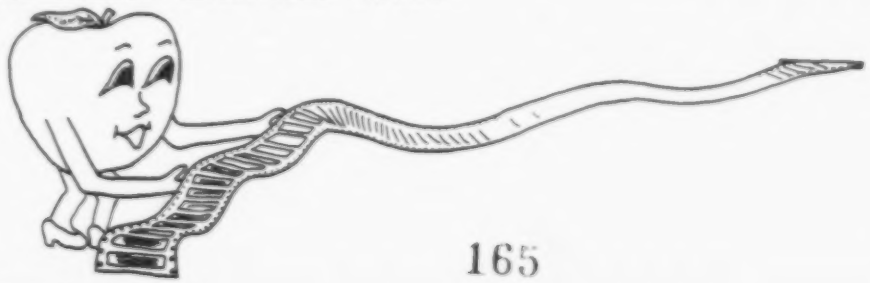
1. Press open-apple P.
2. Select : The screen. press RETURN
3. Follow the screen instructions to see what each label will look like.
4. After viewing the labels, any necessary changes can be made before printing.

> NOTE: Both arranging (open-apple A) and selecting (open-apple R) features can be used to determine which records will be printed, and in what order.

5. Place the cursor on the < symbol in front of the LAST NAME category.
6. Arrange the address labels from A to Z.
7. Print to the screen.
8. Press open-apple S to save this file.

> The data base has now been saved, along with ALL the printer specifications you have set up. The same data base file can contain up to eight different report formats.
>
> To find this set up in the future:
>
> * First add the LABELS data base to the Desktop.
> * Press open-apple P.
> * Now you will not have to "create" a labels format but rather "get the report format" -- the one called HOME ADDRESS LABELS.

9. Depending upon time and printer availability, print the LABELS data base file.



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activity 3 PRINTING TABLE REPORTS

In this activity you will print a data base file using the tables-style format: records printed as a table of columns and rows. After setting up category headings, certain record entries will be "marked" for automatic insertion in each record. The printed report will display both group and report totals.

PART 1 : CREATING A DATA BASE

1. Begin at the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3 Select : 4. Make new file for the Data Base, press RETURN
4. Select : 1. From scratch — press RETURN
5. For filename, type : CHECKS — press RETURN

PART 2 : ENTERING CATEGORY HEADINGS

When creating a new data base file, first enter category names.

1. All entries will be upper case, set the CAPS LOCK key.
2. Use open-apple Y to erase Category 1.
3. Enter the following categories. After each entry press RETURN to continue.

```
File: CHECKS          CHANGE NAME/CATEGORY     Escape: Review/Add/Change

Category names
-------------------------------------------------------------------------
DATE                          |
CHECK #                       | Options:
PAID TO                       |
AMOUNT                        | Type category name
CATEGORY                      | Up arrow   Go to previous category
MEMO                          |
;                             |
TAX DED ?                     |
CLEARED ?                     |
                              |
                              |
                              |
```

These categories will contain information relating to personal checks. Each record will contain information for one check. The file will contain checks written in one month.

The category entered as a semicolon provides an "extra" line for long memo entries. Entries over 76 characters could be continued on the next line and on the single-record screen read as a block of text.

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4. After entering the last category, press ESC.

5. Press the SPACE BAR to begin entering record information.

PART 3 : SETTING STANDARD VALUES

Before entering information for each check, we will use open-apple V (for Standard Value). This setting allows certain entries to be automatically inserted into each NEW data base RECORD. With this feature, repetitive information (e.g., zip codes) is only entered once, yet it appears in all records.

1. Press open-apple V.
   "SET STANDARD VALUES" will appear at the top of the screen.

2. With the cursor on the DATE category,
   type : FEB press RETURN

3. Move the cursor to the category TAX DED ?

4. Type : NO press RETURN

5. After the category CLEARED ?, type : NO press RETURN

6. Press ESC

   "INSERT NEW RECORDS" will be at the top of the screen -- if not, type open-apple I. Information for the first record can now be entered.

PART 4 : ENTERING DATA

Information for six checks is listed below. Enter information for each check in the single-record layout. Note that as each new record is displayed, standard value entries will be automatically entered.

1. To enter the date, use the arrow key to move the cursor beyond FEB, then type the day.

2. Use open-apple Y to change a standard value entry (e.g., NO to YES).

3. When the six checks have been entered, move through the entries on both the single- and multiple-record screens.

Feb 1	1001	FRIENDLY FINANCE	498.00	MORTGAGE		YES	NO
Feb 1	1002	WILLAMETTE WATER	14.25	UTILITIES	9 CU FT	NO	NO
Feb 1	1003	NORTHWEST POWER	44.89	UTILITIES	1190 KWH	NO	NO
Feb 1	1004	LATCHKEY	98.00	CHILD CARE	JAN CARE	YES	NO
Feb 2	1005A	CITY BANK	58.00	LOAN PAYMENT	STUDENT LOAN	YES	NO
Feb 2	1005B	CITY BANK	50.45	LOAN PAYMENT	WEATHER LOAN	NO	NO

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PART 5 : COMBINING DATA BASE FILES

In this activity we will NOT adjust column widths for screen viewing.

In order to work with more checks we will add a second check file to the Desktop, and transfer a copy of those records into your CHECK file.

1. ESC to the Main Menu.
2. Select : 1. Add files to the Desktop — press RETURN
3. Select : 1. Get files from: current disk — press RETURN
4. Select : --> FEB CHECKS — press RETURN

   A data base file with 20 more February checks is now on the Desktop.

5. With the cursor on the first record, press open-apple C.
6. Select: To clipboard — press RETURN
7. We will copy every record. Use the DOWN arrow key or open-apple 9 to highlight all the records.
8. Press RETURN.

   A copy of the entire data base file is now on the clipboard.

9. Press open-apple Q (for a QUICK switch).
10. Highlight: CHECKS — press RETURN
11. Display this data base in the multiple-record layout.
12. Press open-apple C.
13. Select: From clipboard — press RETURN

    Your CHECKS file should now contain 26 checkbook entries for February.

> NOTE: This same procedure can be used to combine checks written in other months. IF you have enough computer memory, single data base containing checks for the entire year could be set up this way.

PART 6 : ARRANGING RECORDS

Right now this file is arranged by date. We can quickly reorganize the arrangement of the records with open-apple A.

1. Move the cursor to the CATEGORY column.
2. Press open-apple A.
3. Arrange this file from A to Z by CATEGORY.

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4. The screen should show:

File: FEB CHECKS REVIEW/ADD/CHANGE Escape: Main Menu

Selection: All records

DATE	CHECK #	PAID TO	AMOUNT	CATEGORY
Feb 15	1014	DISCOUNT AUTO	28.95	AUTO EXPENSE
Feb 26	1023	MIDNIGHT AUTO R	110.00	AUTO EXPENSE
Feb 1	1004	LATCHKEY	98.00	CHILD CARE
Feb 5	1007	ENU CHILD CARE	57.00	CHILD CARE
Feb 25	1022	MRS. MILLER	40.00	CHILD CARE
Feb 11	1010	THE BON	24.95	CLOTHING
Feb 17	1015	PENNEYS	32.97	CLOTHING
Feb 17	1017	A+ COMPUTER STO	15.50	COMPUTER, SOFTW
Feb 27	1024	MARCH OF DIMES	7.00	CONTRIBUTION
Feb 3	1006	ALBERTSONS	41.29	FOOD
Feb 14	1013	MCDONALDS	7.45	FOOD
Feb 19	1019	WAREHART	73.28	FOOD
Feb 22	1021	SAFEWAY	53.00	FOOD
Feb 27	1025	ALBERTSONS	61.87	FOOD
Feb 17	1016	THE BEAUTY SHOP	14.00	HOUSEHOLD, MISC

Type entry or use @ commands @-? for Help

PART 7 : SELECTING RECORDS

1. As a review, write a record selection rule so only checks entered as TAX deductible appear on the screen.

2. Use the single-record screen to view each TAX DED ? category entry.

   How many loan payment checks have been entered this month that are tax deductible?

   _____

3. Bring all records back onto the screen.

4. Press open-apple R.

5. For the question "Select all records," select : YES

PART 8 : ADDING AND DELETING CATEGORIES

We will add one category to this file: monthly deposits.

1. Display the data base in the multiple-record layout.

2. Press open-apple N (For Name or Category Change).

   The CHANGE NAME / CATEGORY screen will appear.

3. While the cursor is at the bottom of the screen, the file name can be changed. We will continue to use the same filename, so press RETURN.

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4. Move the cursor to the line under **CLEARED ?**

5. Type : **DEPOSIT** press RETURN

> NOTE: New category names can be added <u>anywhere</u> in the list by moving the cursor to an existing category, pressing open-apple I and typing on the blank line that will be inserted.
>
> NOTE: Adding or deleting category names will erase all report formats -- e.g. screen layout adjustments or report formats for printouts -- from a file. (We have not set any in this **CHECKS** file.)
>
> NOTE: Category names can be permanently deleted from a file while on the CHANGE NAME/CATEGORY screen, by using open-apple D.

6. Press ESC to return to the multiple-record screen.

PART 9 : ADDING RECORDS

Two deposit entries will be included. Information for these entries will be recorded in the **DATE** and **DEPOSIT** categories.

1. Press open-apple I (to Insert a Record).

   "INSERT NEW RECORDS" will appear at the top of the screen.

2. For **DATE** enter : Feb 1
   For **DEPOSIT** enter : 1675.32 press RETURN

3. In the next blank record:
   For **DATE** enter : Feb 15
   For **DEPOSIT** enter : 489.75 press RETURN

4. ESC to the multiple-record screen.

PART 10 : CREATING A TABLE REPORT

We will print February checks and deposits using a TABLES format. Column widths will be adjusted so all information can be displayed in the printed report.

> NOTE: Layout settings affecting how records appear <u>on screen</u> do not affect a printed report. Adjusting column widths for <u>printed</u> reports is done within each report FORMAT. In other words . . . you usually have to adjust layouts for both viewing and printing.

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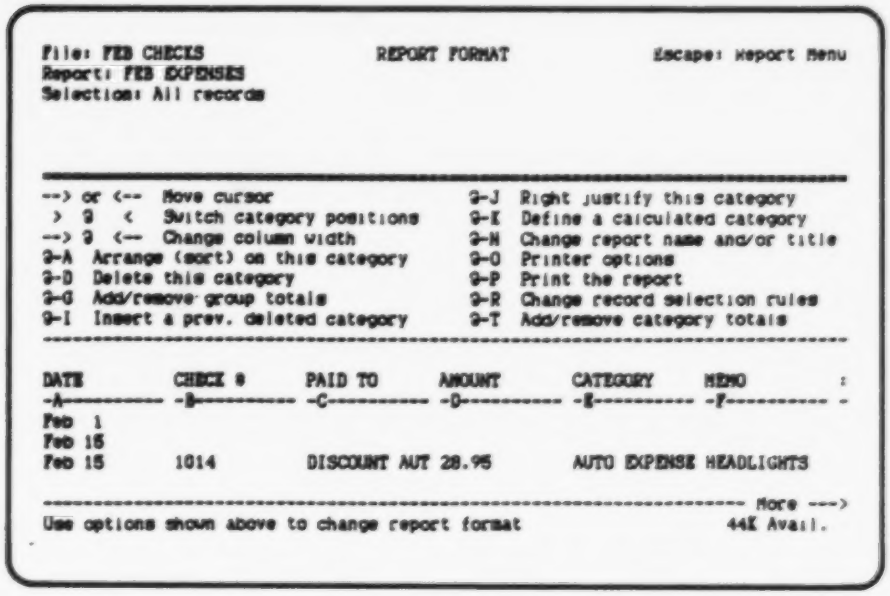
1. Press open-apple P.

2. Select: 2. Create a new "tables" format press RETURN

3. For report name, type : FEB EXPENSES press RETURN

4. The report format for TABLE reports should now be on screen:


File: FEB CHECKS REPORT FORMAT Escape: Report Menu
Report: FEB EXPENSES
Selection: All records
--> or <-- Move cursor
> @ < Switch category positions
--> @ <-- Change column width
@-A Arrange (sort) on this category
@-D Delete this category
@-G Add/remove group totals
@-I Insert a prev. deleted category
@-J Right justify this category
@-K Define a calculated category
@-N Change report name and/or title
@-O Printer options
@-P Print the report
@-R Change record selection rules
@-T Add/remove category totals
DATE CHECK # PAID TO AMOUNT CATEGORY MEMO
-A- -B- -C- -D- -E- -F-
Feb 1
Feb 15
Feb 15 1014 DISCOUNT AUT 28.95 AUTO EXPENSE HEADLIGHTS
More --->
Use options shown above to change report format
44K Avail.

The REPORT FORMAT menu screen contains several of the same options that are available for adjusting a screen layout.

* The bottom of the screen again displays three representative records: column widths and category positions can be adjusted and viewed here.

* The top of the screen displays the open-apple commands (shown as @-A, @-D etc.) that can be used to affect how a printed TABLES report will appear.

* Printed reports can contain records that have been arranged or selected. Category totals and subtotals can be displayed.

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* When moving the cursor to the last category, a LEN indicator will be displayed on screen. The number appearing under the word "LEN" indicates how many spaces per line the data base will require.

* If we want an entire record to appear on ONE PRINTED LINE, sometimes adjustments must be made.

First we will adjust column widths: increasing some so all information can be displayed on the printout, decreasing other to remove extra spaces.

5. Decrease columns A and B (DATE and CHECK #) by 3 characters.

6. Increase column C (PAID TO) 3 characters.

7. Increase column E (CATEGORY) 8 characters.

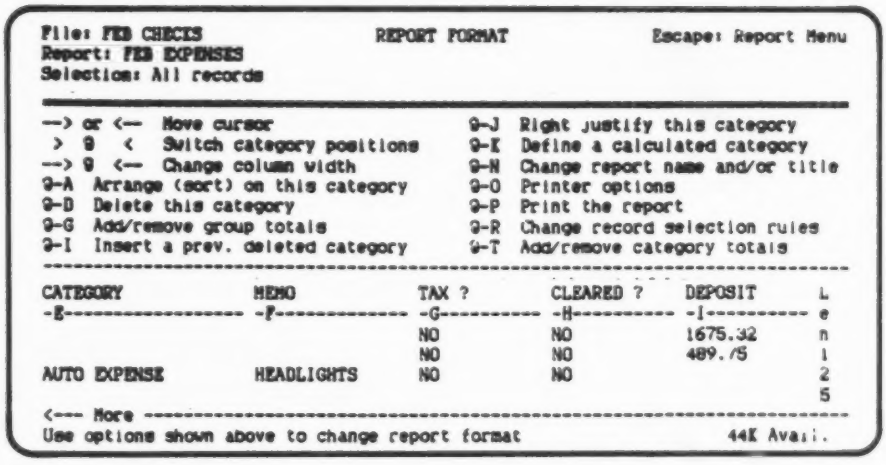
8. Increase column F (MEMO) 3 characters.

Next we will place a category in the print "buffer." It will remain in the data base file, but will not appear in the printed report.

9. Move the cursor to column G (:).

10. Press open-apple D.

11. Tab past the last category (DEPOSIT) and note the LEN indicator:



* According to the LEN indicator, each data base record requires 125 characters per line.

* Like the spreadsheet, the default characters per inch setting is 10 -- allowing only 80 characters per line.

* To allow more characters per inch, change the CI setting in the OPTIONS MENU.

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12. Press open-apple O.

13. At the bottom of the screen type: CI — press RETURN
14. Next type : 17 — press RETURN

15. Note the characters per line (estimate).

```
File: FEB CHECKS                PRINTER OPTIONS          Escape: Report Format
Report: FEB EXPENSES
-------------------------------------------------------------------------------

-------Left and right margins--------      ------Top and bottom margins-------
PW: Platen Width          8.0 inches      PL: Paper Length         11.0 inches
LM: Left Margin           0.0 inches      TM: Top Margin            0.0 inches
RM: Right Margin          0.0 inches      BM: Bottom Margin         2.0 inches
CI: Chars per Inch        17              LI: Lines per Inch        6

    Line width            8.0 inches          Printing length       9.0 inches
    Char per line (est)   136                 Lines per page        54

          --------------------Formatting options--------------------
          SC:  Send Special Codes to printer                    No
          PD:  Print a Dash when an entry is blank              No
          PH:  Print report Header at top of each page          Yes
               Single, Double or Triple Spacing (SS/DS/TS)      SS
```

When printed at 17 characters per inch, information in all the columns (125 characters) will now fit on one line.

16. For this report we will include a report Header (filename, report name) at the top of each page. The PH setting will remain YES.

17. Change the bottom margin setting to .5 inch.

18. Press ESC to return to the REPORT FORMAT MENU.

PART 11 : SWITCHING CATEGORY POSITIONS

With the present layout, deposit entries will be printed in the last column. We will switch that category to a new location.

1. Place the cursor on the line below DEPOSIT.

2. Hold down the open-apple key and tap the < key. Note that the categories DEPOSIT and CLEARED ? have "switched" positions.

3. Again hold down the open-apple key, tap the < key and switch the DEPOSIT category one position further to the left.

4. Repeat this process until DEPOSIT is in column D.

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PART 12 : VIEWING THE REPORT ON SCREEN

We can view a data base table report on the screen. If any categories appear crowded or incomplete, we can adjust column widths or category positions before printing. However, when the LEN setting becomes greater than 80, some of the last columns can not be viewed on the screen.

1. Move the cursor to column A (DATE).
2. Press open-apple P.
3. Select : The screen press RETURN
4. Type the date, or just press RETURN.

Now you can view the report for the first 80 characters.

5. Press the SPACE BAR to view all records.
6. When you return to the REPORT FORMAT screen, make any necessary column adjustments. You can increase columns up to a LEN of 136.

PART 13 : PRINTING A CATEGORY TOTAL

AppleWorks provides a very handy feature that can be used with categories containing numbers. With open-apple T (for Category Total) the values in a column can be totaled and included in the printout. We will use this feature to get totals for February deposits and check amounts.

1. Make sure you have the REPORT FORMAT menu on the screen.
2. Place the cursor on the AMOUNT column.
3. Press open-apple T.
4. Note the bottom of the screen. You can determine the number of decimal places for the category.
5. For number of decimal places, type : 2 press RETURN
6. Again note the bottom of the screen. You can determine how many blank spaces to allow after the entry.
7. For number of blank places, type : 3 press RETURN

A double dashed line = = = will appear UNDER column E indicating that this column will display a total. The values in column E have been replaced with 99999s, called "placeholders."

8. Print this report to the SCREEN and note the last entry.
9. Set column D, DEPOSIT, to also contain a total.

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> *Note:* To remove a total from a category, place the cursor on the column and again type open-apple T.

PART 14 : PRINTING GROUP TOTALS

AppleWorks provides another feature which can provide a more detailed report. The open-apple G command (for GROUP TOTALS) enables you to "cluster" records by GROUPS. And if you have set up the open-apple T command, each group will contain its own SUBTOTAL. Try this.

Check records will be divided into similiar categories (e.g., all FOOD entries will be together). To ensure that all food entries are totaled together, Column F must first be alphabetized.

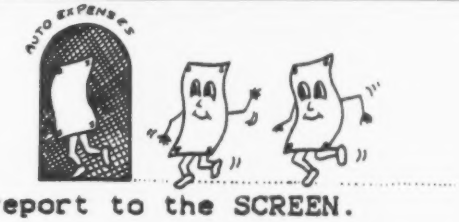
1. Move the cursor to column F (CATEGORY).
2. Press open-apple A and arrange from A to Z.
3. With the cursor on column F, press open-apple G.
4. Select NO for the next two questions.

The REPORT FORMAT screen (note: *) now indicates that subtotals will be calculated for each major grouping in column F (CATEGORY).

```
File: FEB CHECKS                REPORT FORMAT          Escape: Report Menu
Report: FEB EXPENSES
Selection: All records

Group totals on: CATEGORY *
-------------------------------------------------------------------------
—> or <—  Move cursor                    ⌘-J  Right justify this category
 > ⌘  <   Switch category positions      ⌘-K  Define a calculated category
—> ⌘  <—  Change column width            ⌘-N  Change report name and/or title
⌘-A  Arrange (sort) on this category     ⌘-O  Printer options
⌘-D  Delete this category                ⌘-P  Print the report
⌘-G  Add/remove group totals             ⌘-R  Change record selection rules
⌘-I  Insert a prev. deleted category     ⌘-T  Add/remove category totals
-------------------------------------------------------------------------

DATE      CHECK #  PAID TO          DEPOSIT    AMOUNT     CATEGORY
-A------- -B------- -C------------- -D------   -E------   -F-----------------
Feb  1                             99999.99   99999.99
Feb 15                             99999.99   99999.99
Feb 15    1014     DISCOUNT AUTO   99999.99   99999.99   AUTO EXPENSE
                                   ========   ========
------------------------------------------------------------------------ More --->
Use options shown above to change report format                    44K Avail.
```



5. Print this report to the SCREEN.

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Records have been grouped by their category entry. Subtotal amounts for each category now appear in the report. The last entry in the report shows the total for both deposits and check amounts.

File: FEB CHECKS Page 1
Report: FEB EXPENSES

DATE	CHECK #	PAID TO	DEPOSIT	AMOUNT	CATEGORY
Feb 1			1675.32		
Feb 15			489.75		
			2165.07		
Feb 15	1014	DISCOUNT AUTO		28.95	AUTO EXPENSE
Feb 26	1023	MIDNIGHT AUTO R		110.00	AUTO EXPENSE
				138.95	
Feb 1	1004	LATCHKEY		98.00	CHILD CARE
Feb 5	1007	EMU CHILD CARE		57.00	CHILD CARE
Feb 25	1022	MRS. MILLER		40.00	CHILD CARE
				195.00	
Feb 1	1002	WILLAMETTE WATE		14.25	UTILITIES
Feb 1	103	NORTHWEST POWER		44.89	UTILITIES
Feb 13	1012	COUNTRY CABLE		31.00	UTILITIES
				90.14	
			2165.07*	1442.83*	

Experiment with this GROUP TOTAL feature.

6. To remove this command, move the cursor to CATEGORY.
   Type open-apple G.

Note: the message "Group totals on: CATEGORY" is no longer on the screen.

7. Press open-apple G.
   Answer the first question Yes.

8. For better screen viewing, move the cursor to column G.

9. Print the report to the screen.

10. Turn off Group Totals.

11. Move the cursor back to column F.

12. Press open-apple G.
    Answer NO to the first question.
    Answer YES to the second question.

13. Print to the screen.

14. Reset Group Totals as you did in steps 3 and 4.

15. Save this file.

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PART 15: CREATING A REPORT TITLE

Our report can contain a customized title.

1. Press open-apple N (for Name and/or Title Change)
2. To keep the same report name press RETURN
3. Note the cursor ABOVE column A.
4. Tap the SPACE BAR 25 times.
5. Now type: ++ END OF THE MONTH REPORT ++ press RETURN
6. Print to the screen. Note the report title.

```
                    ++ END OF THE MONTH REPORT ++
File:   FEB CHECKS                                          Page  1
Report: FEB EXPENSES
DATE      CHECK #  PAID TO          DEPOSIT    AMOUNT   CATEGORY
--------- -------- --------------- --------   --------  --------------------
Feb  1                             1675.32
Feb 15                              489.75
                                   2165.07

Feb 15    1014     DISCOUNT AUTO                 28.95  AUTO EXPENSE
Feb 26    1023     MIDNIGHT AUTO R              110.00  AUTO EXPENSE
                                                138.95

Feb  1    1004     LATCHKEY                      98.00  CHILD CARE
Feb  5    1007     EMU CHILD CARE                57.00  CHILD CARE
Feb 25    1022     MRS. MILLER                   40.00  CHILD CARE
                                                195.00

Feb 11    1010     THE SON                       24.95  CLOTHING
```

7. Save this file.

PART 16 : PRINTING A REPORT TO THE PRINTER

1. Move to a computer with a printer.
2. Load AppleWorks and add your data base file to the Desktop.
3. Press open-apple P.
4. Select : 1. Get a report format.
5. Select : FEB EXPENSES.
6. Turn on the printer. Adjust the paper.
7. Press open-apple P.
8. Select your printer from the menu.
9. Type the date.
10. For how many copies? select : 1
11. Print this report.

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File: CHECKS
Report: FEB EXPENSES

DATE	CHECK #	PAID TO	DEPOSIT	AMOUNT	CATEGORY	MEMO	TAX ?	CLEARED ?
Feb 1			1675.32				NO	NO
Feb 15			489.75				NO	NO
			2165.07					
Feb 15	1014	DISCOUNT AUTO		28.95	AUTO EXPENSE	HEADLIGHTS	NO	NO
Feb 26	1023	MIDNIGHT AUTO REPAIR		110.00	AUTO EXPENSE	WHEEL BEARING	NO	NO
				138.95				
Feb 1	1004	LATCHKEY		98.00	CHILD CARE	JAN CARE	YES	NO
Feb 5	1007	ENU CHILD CARE		57.00	CHILD CARE	JAN CARE	YES	NO
Feb 25	1022	MRS. MILLER		40.00	CHILD CARE	EVENING CARE	YES	NO
				195.00				
Feb 11	1010	THE BON		24.95	CLOTHING	LR PANTS	NO	NO
Feb 17	1015	PENNEYS		32.97	CLOTHING	SCHOOL CLOTHES	NO	NO
				57.92				
Feb 17	1017	A+ COMPUTER STORE		15.50	COMPUTER, SOFTW	DATA DISKS	YES	NO
				15.50				
Feb 27	1024	MARCH OF DIMES		7.00	CONTRIBUTION		YES	NO
				7.00				
Feb 3	1006	ALBERTSONS		41.23	FOOD		NO	NO
Feb 14	1013	MCDONALDS		7.45	FOOD	LUNCH	NO	NO
Feb 19	1019	WAREMART		73.28	FOOD		NO	NO
Feb 22	1021	SAFEWAY		53.00	FOOD		NO	NO
Feb 27	1025	ALBERTSONS		61.87	FOOD		NO	NO
				236.83				
Feb 17	1016	THE BEAUTY SHOP		14.00	HOUSEHOLD, MISC	HAIR CUT	NO	NO
				14.00				
Feb 2	1005A	CITY BANK		58.00	LOAN PAYMENT	STUDENT LOAN	YES	NO
Feb 2	1005B	CITY BANK		50.45	LOAN PAYMENT	WEATHER LOAN	NO	NO
				108.45				
Feb 3	1008	DR V		35.00	MEDICAL	DOCTOR	YES	NO
Feb 21	1020	FRED MEYERS		13.49	MEDICAL	COLD PILLS	YES	NO
				48.49				
Feb 1	1001	FRIENDLY FINANCE		498.00	MORTGAGE		YES	NO
				498.00				
Feb 9	1009	VIDEO CITY		7.00	RECREATION	VIDEO RENTAL	NO	NO
Feb 20	1018	WILLAMETTE PASS		18.50	RECREATION		NO	NO
				25.50				
Feb 11	1011	FRED MEYERS		7.05	SCHOOL SUPPLIES	BULLETIN BOARD	YES	NO
				7.05				
Feb 1	1002	WILLAMETTE WATER		14.25	UTILITIES	9 CU FT	NO	NO
Feb 1	1003	NORTHWEST POWER		44.89	UTILITIES	1190 KWH	NO	NO
Feb 13	1012	COUNTRY CABLE		31.00	UTILITIES	CABLE TV	NO	NO
				90.14				
			2165.07=	1442.83=				

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Open-Apple Keystrokes for Data Base

Arrange	- A	Arrange or sort a category
Copy	- C	Copy records
Delete	- D	Delete records or categories
Edit (Cursor Switch)	- E	Change from insert to overstrike cursor and back
Find	- F	Find a record
Hard Copy	- H	Print current screen display
Insert	- I	Insert a record or a previously deleted category
Justify	- J	Justify report categories
Calculate	- K	Create a calculated column
Layout	- L	Modify layout
Move	- M	Move records
Name	- N	Change the name of a file, category or report
Options (Printing)	- O	Display printing options menu
Print	- P	Print report
Quick Change	- Q	Work with a different file on the desktop
Rules	- R	Establish record selection rules
Save	- S	Save the file to disk
Total	- T	Add or remove category totals
Value	- V	Change default vaules
Clear	- Y	Clear (delete) to end of entry
Zoom	- Z	Zoom to single or multi-record layout
Ruler	- 1 : - 9	Move to beginning (1), end (9), or elsewhere proportionally (2-8) in a file
Help	- ?	Display help screen
Cursor Move	- – or - –	Change a category's size
Cursor Move	- ! or - !	Scroll one full screen vertically

ARTICLES ON DATA BASE APPLICATIONS

DATABASING

in the Elementary (and Secondary) Classroom

by
Kathy Pon

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As a first-year teacher, I was given a third-fourth grade combination class full of curiosity. They all were excited to learn about Indians, and we spent many wonderful days studying them. I say "we" because I enjoyed the subject as much as the class. However, the following year, I faced the problem of what to teach my fourth graders, whom I had had the previous year as third graders. The majority of them wanted to study Indians again, but what details were left?

Fortunately, I've always had an interest in developing higher-level thinking skills in students. This prompted some research which resulted in the piloting (gulp) of an exciting tool that aids higher-level thinking in the classroom—use of database management as an inquiry tool.

The application of database management for inquiry is grounded in cognitive learning theory as it operates within Piaget's framework of the concrete, symbolic and abstract learners. Students gather data on a given academic topic in a number of concrete ways. For example, they examine different books, films, maps, museums, etc., for information. They then label and group their information in a meaningful, symbolic manner—that of the database form. Finally, with more analysis they are able to synthesize the pieces of data and combine them in new and different ways. Students can then make and test more abstract generalizations about the information.

Hilda Taba had teachers and students using this data retrieval method for learning, although she did it with paper and pencil. In one study she did using this method, she found that students who were given practice at making generalizations were able to make increasingly valid generalizations about their data, i.e., think more effectively. The students, therefore, were meeting multiple learning objectives with the same activity. They were increasing their knowledge and improving the quality of their thinking.

How does an elementary school teacher introduce the use of database management into the classroom? With enthusiasm, a critical examination of the many database programs available and careful management planning. Consider the educational possibilities of this tool as I describe my experience in using it in the classroom.

The first step was to have students gather data. Because they were studying California Indians, they found most of their information in our local library and Indian museum.

Sample of a Primary Data Chart on Maidu Tribe

INFORMATION COLLECTED	LABEL OR ATTRIBUTE GIVEN LATER
Their houses were made of tules. They were round. They looked like bowls.	Home
They lived near or in the Buttes Mountains. The city nearby is called Yuba City. It is in Sutter County. They lived near the Feather River.	Location
They mostly ate acorns. They ate deer and small animals. They fished. Ate seeds.	Food
Men hunted and fished. Women gathered acorns and cooked.	Jobs
They danced and made musical instruments with reeds, especially at acorn harvest. They told stories. Had albino deer and acorn ceremonies.	Recreation, Special Ceremonies
They used mortars and pestles to grind acorns with. They hunted with bows and arrows and fished with harpoons.	Tools
They wore hides and rabbit skins in winter. They used moccasins with high ankle covers for the mountains.	Clothing

Figure 1.

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Next, they designed a form on which to display this data, using a label to classify each piece of information such as FOOD or HOME. This form was entered on the computer database.

Completed Student Computer Database File

TRIBE	MAIDU
LOC	N V BUTTE MTNS YUBA CITY
CLI	COOL WINTERS & HOT SUMMERS
HOME	BARK OR BRUSH, BOWL SHAPE TEMPORARY
FOOD MAJ	ACORN DEER FISH
FOOD MIN	NUTS SEEDS BULBS BERRIES
JOB M	HUNTING TRAPPING FISHING
JOB FM	GATHERING, FOOD PREP KIDS
CLO	SKINS IN WINTER MOCCASINS
SPEC TOOLS	DIGGING STICK MORTAR NETS
OUTSTD FEAT	ACORN & ALBINO DEER CERE. USED SWEATHOUSES
TRIBE	MIWOK—MOUNTAINS
LOC	C V CHAW-SE PARK NEAR YOSEMIT
CLI	MILD-COOL WINTERS & HOT SUMMERS
HOME	TULE BRUSH SHELTERS—TEMPORARY
FOOD MAJ	ACORNS FISH
FOOD MIN	ROOTS BULBS SM GAME
JOB M	HUNTING FISHING
JOB FM	GATHERING, FOOD PREP
CLO	LIGHT TO NONE—BAREFOOT
SPEC TOOLS	MORTAR & PESTLE
OUTSTD FEAT	SWEATING NECESSARY FOR UNT SOME AGRESSIVE
TRIBE	POMO—NORTHEASTERN
LOC	N V CLEAR LAKE & N COASTAL MTN
CLI	COOL WINTERS & HOT SUMMERS
HOME	BARK TIPILIKE OR BRUSH TEMP
FOOD MAJ	FISH ELK DEER SEA OTTERS
FOOD MIN	NUTS SEEDS BERRIES
JOB M	HUNTING FISHING TRAPPING
JOB FM	COOKING GATHERING KIDS
CLO	SKINS IN WINTER, LITTLE—MOCCA.
SPEC TOOLS	BALSA BOATS NETS HARPOONS
OUTSTD FEAT	MADE BEAUTIFUL TWINED AND COILED BASKETS CLAMS $$

Figure 2.

I conducted small-group sessions at the computer where students were then able to generalize about attributes that seemed to be related. We sometimes used Venn diagrams as in figure 3. I showed the students commands and procedures that enabled them to check their generalizations by making data searches for tribes that listed these criteria. Thus, their generalizations could be verified. For example, "Tribes that lived in the North seemed to wear skins and furs for clothing" was decided to be a relationship. By searching for tribes that met the stated generalization, students were able to check for tribes that listed the information SKINS under CLOTHING and NORTH under LOCATION.

Only a small group of my students discussed possible causes and effects. Most students were not cognitively ready to create hypotheses about causes and effects of the data and test them by making a database search. Instead, they concluded the study by discussing why they thought certain attributes were related.

Venn Diagram on Two Whole Tribe Comparisons

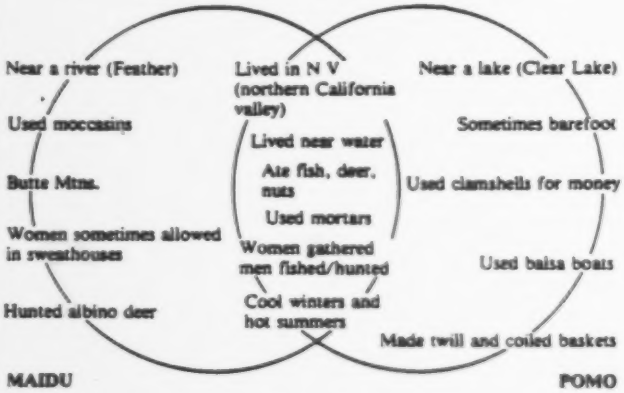

Figure 3.

However, one group continued the last part of the study before and after school. They took the generalizations made earlier at the computer and turned them into if/then statements. They then tested them for a cause-and-effect relationship by writing a null hypothesis statement and objectively testing it by locating the information in the database.

Students practiced the skill of making if/then statements and related null hypothesis statements on non-Indian subjects like this:

1) Practice with a generalization
"It seems like rain and umbrellas go together."

2) became an if/then statement
"If it rains, then the number of umbrellas on the street will increase."

3) and then was written as a null hypothesis statement:
"On a rainy day the number of umbrellas will not increase on the streets."

Likewise, they developed this generalization from their study of California Indians,
"Indians who ate acorns used mortars and pestles."

wrote it as an if/then statement
"If Indians ate acorns, then they used mortars and pestles."

and then wrote the following null hypothesis statement:
"Indians on the database who have acorns listed under FOOD will not list mortars and pestles under TOOLS."

The exciting part about working with the concepts at this level was the discussions about the validity of the data retrieved. Could it have been found with different wording? Even if the hypothesis was validated, did it really *prove* a cause and effect? Perhaps Indians who ate acorns used the mortar and pestle to wash clothes. The students became more critical than I would ever have expected them to be in examining their findings.

The most rewarding part of this study was at the end of the unit, two months later. I put together my own Indian database on tribes that my students had not studied. After students

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reviewed patterns they had observed, I planned to give an attribute of an unknown tribe (such as "these Indians wore little clothing") and have students make an inference about another related attribute or generalization based on the established patterns (such as "they must have lived in a warm climate"). I thought that if I required students to give reasons for their choice of attributes, that that would be a valid evaluation of their level of thinking. Imagine my surprise when I got more than that! Here's an example:

The pattern that "most tribes that ate shellfish had some sort of money system" was established. I then gave them the fact that "the Chumash tribe near Santa Barbara ate shellfish." I only expected the generalization that "they probably had a money system, because tribes who had access to shellfish usually used the shells in trading" in return. Instead, I heard statements like, "They must have used boats if they fished in the sea," or "They probably hunted in groups for sea lions," or "The boats must have been made of some sturdy wood (planks) to withstand the sea." The kids had used a great deal of imagination in their thinking!

Many powerful database management programs often used in businesses are not always as useful in an educational setting. They may be able to make as many as 20 different combinations of "and + or" searches, which is valuable when making generalizations about related attributes. However, these same database management programs may not be set up to retrieve data on a single attribute from every page in the file. (To show, for example, FOOD for every tribe in the database.) Most importantly, business programs can be very structured and be vague in their documentation, which limits their use with children.

Less-structured database management programs are being developed. Some don't have the power to make as many "and + or" combinations of searches as a business-oriented database, but they do an excellent job at finding one "and + or" statement at a time. They also locate and print isolated attributes from each page in the database. The forms are less structured, which is excellent for children. They also give "help menus," easily accessible instructions, for setting a form or making a search on the computer monitor. One program now out even comes with some ready-made forms for class lists and book reports.

At a time when many databases or spreadsheets are on the market, educators should consider their students' cognitive level and adopt one that is appropriate for their particular classroom use. Content areas like social studies or science that have topics with many attributes (countries, the plant or animal kingdom, cities, for example) work well for this kind of study. Not only are these tools giving students a way to manipulate the overwhelming amount of information in society today, they are providing students opportunities to create strategies for critical thinking, perhaps the most useful skill for the eighties and beyond. **END■**

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A Comparison of Three Available Commercial Database Management Programs Based on Criteria Appropriate for the Classroom

Criteria	Instant Recall	Quickfile	DB Master
Flexibility and loose structure in setting up a form	X	X	
Power to make "and" search	X	X	X
Power to make an "and" + "and + or" search		X	X
Ability to add categories to a form already set up	X	X	
Overall ease of use	X	X	
Power to isolate one category or attribute from all pages in the database and display/PRINT it		X	
Command to allow for spelling errors	X	X	X
"Help screens"	X	X	

Figure 4.

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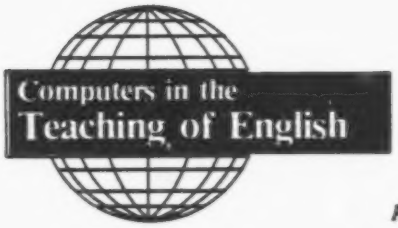

Robert Shostak

Reprinted from The Computing Teacher, November 1984, Vol. 12 No. 3.

Science and math types, beware! The language arts folks are getting into your once exclusive world of the database. And after reading Joan Dunfey's helpful suggestions for how to integrate the use of databases in a variety of language arts applications, they will very likely be in heavy competition for software funds in the next computer budget.

Although Joan does not mention it in her article, I thought it would be appropriate to note that Dialog Information Services of Palo Alto, California, has available through Magazine ASAP and Trade & Industry ASAP, databases containing the full text (indexed) of more than 130 popular magazines and trade journals. That's another good reason for buying a modem and requesting a telephone for your classroom. You can't be part of the new information revolution unless you have the necessary technology to join.

Using a Database in an English Classroom

by
Joan Dunfey

Databases, once viewed as the property of the social sciences and mathematics, can also be a powerful and creative tool in an English classroom.

What is a database and how does it work? One way to think of a database is as an electronic filing system. A database is made up of a series of *records*, each like a library card file with categories of information or *fields* such as author, title, subject and publisher. The sum total of these "cards" or records is a file. The difference between an electronic database and a regular card catalog is its power to read and sort information by multiple fields. For instance, a teacher could sort a database of students to find out which 13-year-olds scored over 90 percent on the comprehension section of a reading test.

Why should English teachers concern themselves with databases? As the traditional teachers of research skills, we must recognize the changing needs of our students in a world of "information explosion." Access to information will be the key to knowledge in the world. Our students will be judged in large part not by what they know, but by their ability to locate what they need to know.

A natural place to begin is with a research project. For years we have been telling students to take notes on 3x5 cards so that they can later rearrange them. By using a database, students will see that researching and notetaking, usually a cumbersome, messy process, can be transformed into a simple and powerful way to use the information they have collected. Once the data or notes are typed into a database, students can experiment with possible ways to organize their information by doing many different kinds of "searches." This process of experimentation, previously done by long hours of shuffling cards, can now be done in seconds. The ease of the process encourages students to ask and find the answers to questions they wouldn't have taken the time to ask before.

Students must feel an investment in a research project to make it work. Patrick Scott, a high school teacher in Great Britain, suggests a class brainstorming session to choose a topic. His class decided to research the availability of part-time jobs in their neighborhood. The whole class compiled a detailed study of the best places to get a job.

Students discovered that pay was generally low and that girls could only secure certain kinds of jobs. Scott suggested publishing a job guide book with graphs as a logical extension of this project. A project focusing on demographics, ethnicity and income is a real way to learn about a neighborhood. Another highly-motivating project would be a school survey of student interests: a compilation of favorite TV shows, video games, rock stars and films. All of this information can serve as a record of students' changing opinions.

Since entering all of the necessary information in this kind of project is in itself time consuming, teachers should choose project topics using the following criteria:

1. Does the project meet an immediate need of the students? What problems do they perceive need solving?
2. Does putting the material into a database suggest alternative uses for the material?
3. Does use of a database make it easier to enter, correct and update the information?
4. Does this material lend itself to being sorted, or would putting this data into a word processor be just as valuable?

Teachers may use databases in other ways, too. They can have their students compose a new kind of "book review." After each student enters his/her book review into the database, other students can then use the collection of reviews to search for one or more books by area of interest, author or rating. A format used in a junior high school in Watertown, Massachusetts, looked like this:

TITLE	Cat Ate My Gymsuit
AUTHOR	P. Danziger
# OF PGS.	119
KIND	F
THEME	A teacher is fired.
LEVEL	6+
RATING	3
REVIEW BY	Sandra Souza
TEXT	Students try to get the school committee to rehire a teacher. She was fired for not saying the pledge of allegiance.

Yet another exciting way to use a database is to create an electronic mail system—easily set up to include the fields of sender, receiver, date and topic. Students can send mail to each other about any topic they wish. Receiving a letter by computer encourages writing

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and can be extended by sending the mail over the phone lines using a modem or simply mailing a disk to a partner school across the country.

Yearbook editors will find databases a real godsend. Imagine having students enter all of the necessary biographical information and then having the computer store it and cross reference it for the index or class will.

Poetry on a database! Why not? After students have written their poems, they can enter them onto the database and classify them by title, author, theme and key words. This classification extends the process of writing and asks students to reflect on their own writing. Some databases have compatible word processing systems and graphing systems. This means that students can compose their writing on a word processor and store it on a database for retrieval by their classmates. Graphing programs give a research project even greater depth.

Which database is the best for your classroom? Some questions to ask:

1. How difficult is the program to learn?
2. How long can each entry be? How much total storage is there in the program?
3. Does the program have graphing and word processing compatibility?

An easy-to-learn program for elementary students is *Notebook* by *Window Magazine*. This database is simple and includes a creative sampler of files tested by Jane Manzelli's sixth-grade class.

A good middle and senior high school system is PFS file. It also is easy to learn and operate and allows for much longer entries. It is part of an integrated system using *PFS Graph* and *PFS Write*. The popular *Bank Street Writer* soon will have *Bank Street Filer* which will allow for this same kind of integration.

Setting up the database can be the most valuable part of the experience. Designing the file and selecting the kinds, range and limitations of the fields promotes the higher-level thinking skills of categorization and organization. Teaching your students how to use a database not only prepares them for a future world of electronic information—it can also be a powerful motivator and medium to teach English. **END**■

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Problem Solving with Data Bases

by
Beverly Hunter

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Lynn and Joey have been learning in history class about Ben Franklin's experiments with electricity. Their teacher has challenged them to find out some of the earliest inventions that used electricity.

"Let's find all the inventions made before 1900," Joey says.

"Too many," replies Lynn.

"Let's find all inventions made before 1900 that used electricity," Joey suggests.

"Yeah. But there might be a lot of them. Let's print a list."

"OK. Just print names of the inventions."

"No. We need dates to know the *earliest* inventions."

"Let's print the dates and sort them by year. Then the earliest inventions will be at the top of the list."

This problem-solving session soon produces a printed list of inventions similar to that shown in figure 1. Lynn and Joey have been using a data management program and a file of information on the subject of inventions. They use the information in the file to solve problems, identify historical trends and relationships, test hypotheses, and learn some techniques for managing information stored in computer-readable form.

What Is a Data Management Program?

The terms "data management program," "data base management system," "filing system" and "file management program" are all used to denote computer programs that enable you to design, build and use collections of information. These collections of information are called files, data files or data bases.

A file or data base is an organized collection of information on a particular subject. A telephone book, a collection of report cards, a class roster, a table of population statistics in an almanac, a library card catalog—these are all familiar kinds of files or data bases we all work with every day on paper. But these are static files—you have no control over the way in which the data are organized. Imagine trying to find all the hardware stores in your town just by using the white pages of the phone book.

A data management program makes it easy for you to use a personal computer to store, update, organize and retrieve information from data files. An important characteristic of such programs is that they are ***general-purpose*** tools. The same program can be used to create and use files on subjects as diverse as fish, student grades, cafeteria menus, countries of the world, poets, pets or paper route customers.

"The same data management program can be used to create and use files on subjects as diverse as fish, student grades, cafeteria menus, countries of the world, poets, pets or paper route customers."

INVENTIONS USING ELECTRICITY

Lightning Rod 1752
Benjamin Franklin

Electric Battery 1796
Alessandro Volta

Electromagnet 1824
Joseph Henry

Morse Code 1837
Samuel Morse

Telegraph 1844
Samuel Morse

Electric Vote Counter 1868
Thomas A. Edison

Stock Ticker 1869
Thomas A. Edison

Telephone 1876
Alexander Graham Bell

Microphone 1878
Thomas A. Edison

Incandescent Lamp (Light Bulb) 1879
Thomas A. Edison

Tabulating Machine 1884
Herman Hollerith

Radio 1896
Guglielmo Marconi

Figure 1.
Lynn and Joey's printout of inventions before 1900 that depended on electricity, sorted by year of invention.

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Why Teachers and Students Use Data Bases

Here are a few examples of different purposes for using computer data bases and data management software:

- **Discovering commonalities and differences among groups of events or things.** For example, what are the differences between states that have grown rapidly in population in the past decade versus states that have declined in population? What are the common properties of gases?
- **Analyzing relationships.** For example, is there a relationship between the distance of planets from the sun and their period of revolution?
- **Looking for trends.** Trace the patterns of change in birthrates in a specific country over the past century. Look for trends in size of households in a country and relate those trends to other demographic factors.
- **Testing and refining hypotheses.** Test the common hypothesis that "good electrical conductors are also good heat conductors" by asking the FILE program to find all the elements that meet each of these criteria separately, and then both of the criteria combined. Are the results surprising? Try a different hypothesis.
- **Organizing and sharing information.** Put the results of your library research about a U.S. president on a data file. If all members of the class store their president's information on the same file, the whole class now has one organized collection of information to use when they want to learn more about any particular president or any group of presidents.
- **Keeping lists up-to-date.** Put names, phone numbers and skills of your club members in a file. As new people join and old members leave, update the file and print out new membership lists.
- **Arranging information in more useful ways.** From a file of data about students, print out a list organized by homeroom, another list organized by bus route, and one of just the band members.

INVENTIONS & TECHNOLOGY

INVENTION: Hot-Air Balloon

YEAR: 1783 TYPE: Transportation

DESCRIPTION: A lighter-than-air craft used for flight which consisted of an impermeable bag filled with hot air.

IMPACT: Resulted in the first manned balloon flight in 1783. Hot-air balloons are still used today for fun and sport.

PRESS CTRL-N TO SEE PAGE 2

INVENTOR: Joseph M. Montgolfier
BORN: 1740 DIED: 1810 SEX: M

NATIONAL ORIGIN: France

NEED FOR INVENTION: Need for an improved balloon design.

ENABLING TECHNOLOGY:
—Leonardo da Vinci was first to speculate about flight
—Previous balloon designs
—Montgolfier got the idea of hot air after watching smoke in chimneys

PRESS CTRL-N FOR REFS; CTRL-P FOR PAGE 1

REFERENCES:
—Encyclopedia Americana, 1980
Vol. 3
—Collier's Encyclopedia, 1983
Vol. 16

NOTE: Jacques Etienne Montgolfier was co-inventor with his brother.

Figure 2.
Sample invention in the Inventions file.

Example Files

Special terms used in talking about data bases are best learned by looking at examples. Figures 2, 3, 4 and 5 show sample portions of four different data files designed and built for students in history, government, physical science and life science. These are from a collection of 24 different files developed by Hunter and Furlong (1,2) and McLeod and Hunter (3,4). Other examples, with lesson plans, are given in *My Students Use Computers* (5).

The files are very different from one another, because each file is designed for a particular set of instructional purposes.

The Inventions file (figure 2) enables students to trace the development of inventions and technology in different fields such as agriculture, textiles, information processing, home/leisure, etc. At this time, there are about 170 different inventions in the file. Of course, students and teachers can add more inventions to the file.

All the information about one invention and its inventor, such as the hot-air balloon shown in figure 2, is on one *record* of the data file. In some data management programs the term used for record is *form*. Within each record or form there are separate *fields* or *data items*. In figure 2, the data item names are in all upper case letters. YEAR: is a field name. 1783 is the data item for YEAR.

PRESIDENTIAL ELECTIONS

YEAR: 1984

Political Parties and Candidates

REPUBLICAN: Ronald Reagan
DEMOCRAT: Walter Mondale
3RDPARTY1:
3RDPARTY2:

Electoral Vote Results

REPUBLICAN: 525
DEMOCRAT: 13
3RDPARTY1:
3RDPARTY2:

Popular Vote Results

REPUBLICAN: 53,428,357 %: 58
DEMOCRAT: 36,930,923 %: 41
3RDPARTY1: %:
3RDPARTY2: %:

WINNER: Reagan (R)

Figure 3.
Part of the election form.

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All the records in one file have the same fields. The NAME of the invention, the YEAR, a TYPE descriptor, a brief paragraph DESCRIPTION of the invention, a paragraph telling the IMPACT of that invention, etc., are included for every invention in the Inventions file.

Figure 3 shows part of a record (form) for the Election file. The actual form has four times this much information in it. Data for each presidential election year since 1789 is on a separate form. The Election file is designed to encourage students to investigate trends in voter participation, development of political parties, campaign financing, campaign issues and congressional elections.

The Common Substances file (figure 4 shows part of a sample form) is designed to encourage children to investigate and become familiar with properties (such as melting point, density, color, etc.) of common substances such as ammonia, brass, chalk, coal, concrete, ice, iron, paper, sugar or wood. They use the file to solve problems such as, "Which kinds of wood will sink in alcohol, but float in water?"

PROPERTIES OF COMMON SUBSTANCES

COMMON NAME: Iron
ELEMENT, COMPOUND, OR MIXTURE: Element
DENSITY (XX.XXXX): 07.8600 (g/ml)
BOILING PT.—C (XXXX.XX): 2750.00
MELTING PT.—C (XXXX.XX): 1535.00
COLOR: Gray
ODOR: Odorless
SOLVENT (OTHER THAN WATER): Acids
SOLUBILITY IN COLD WATER—G/L (XX.XXX): Insoluble

Figure 4.
Part of the Common Substance file record for iron.

Figure 5 shows part of a sample form on the subject of animals. The Animals file is designed to encourage students to explore many different characteristics of animals—to compare and contrast similarities and differences among animals of different classes, habitats, size or food type. Students can, of course, add more animals to the file. At the present time there are 135 animals in the file covering eight classifications, with about 40 different data items for each animal. This file takes up about 60 percent of the capacity of one Apple II floppy disk.

ANIMALS

COMMON NAME: Horse
CLASS: Mammalia
SCIENTIFIC NAME: Equus caballus
WEIGHT IN KG. (XXXXXX.XX): 000453.92
LIFE SPAN IN YRS. (XXX): 035
HABITAT: Terrestrial
BIOME: Domestic
INTEGUMENT: Hair
ACTIVE ALL YEAR (Y/N): Yes
LOCOMOTION: Walking

Figure 5.
Part of the Animals file record for horse.

Stages of Learning with Data Bases

Students can develop their data management skills in three prospective stages:

Stage 1: USING	Students use data files that have been created by someone else, e.g., the files shown in figures 2-5. They use the data to test hypotheses, discover relationships, identify commonalities, look for trends, help solve problems, organize reports or investigate new subjects.
Stage 2: BUILDING	Students build a file designed for them; that is, they are provided with a form or record that has already been designed and tested by the teacher or someone else. Such a blank form is sometimes called a ***template.*** With the teacher's help, students plan the research, identify sources of information, gather data, check it for accuracy, enter the data into the computer, and then use the file in their studies.
Stage 3: DESIGNING	Students plan, design, build and use their own data files.

This progression is suggested because when you *use* a variety of data files you learn many concepts and skills that are useful later in building files. For example, recall the TYPE data item in the Inventions file. Through experience in using TYPE to retrieve information about selected types of inventions, students learn the importance of using standardized descriptors for their data. For example, if you want to look at all the Agriculture inventions, you don't want a mixture of "farming," "farms," "agriculture" and "food-growing" descriptors in the file. This concept is essential when students gather data to

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build their own files, because they must set up and apply a standard way of describing things for their own data bases.

Similarly, when you build files you learn concepts and skills needed in designing files. For example, when students gather the data for their own file they discover that different reference sources provide data in different forms. One science book might give temperature information in centigrade units, for example, while another might give the same information in Fahrenheit. Or one reference book might give populations in millions, while another provides them in hundred thousands. When designing a file, you need to first find out the form of your source data.

STAGE 1: USING DATA FILES

The following sample activities illustrate a sequence in which students become increasingly more proficient in their use of a data file, as well as becoming increasingly more familiar with a particular subject they're studying in history class. The example activities are based on the Inventions file mentioned earlier. Students use this file with the data management program called *PFS:FILE* (Software Publishing Company). However, the instructional purposes and scope and sequence of activities are applicable to the use of any data management program suitable for children.

Activity 1: Exploring a Data Base

When students (or people in general) start to use a data file that is new to them, the first thing they need to do is to explore the file—to discover what data are in the file and how the data are organized. This is similar to the way you might flip through a new textbook to see what topics are covered and how the material is organized. The specific techniques for doing this exploring on the computer depend on the data management software program you are using, how familiar the students already are with the subject matter, and how familiar the students already are with the data management program.

Activity 1 assumes students know very little about the subject matter and nothing about how to use the data management program. Students are taught to *browse* through a data base that is new to them. As they browse, point out various features of the data base, and have them take notes on certain facts and ideas that they notice. For example, the Inventions file has a data item called TYPE—have students take notes on the different TYPEs of inventions they see as they browse (agriculture, textiles, communications, etc.).

During this "exploring" activity, explain any new terms and concepts. For example, the Inventions file (figure 2) contains a data item called ENABLING TECHNOLOGY. It can be explained in this way: When a person invents something, s/he depends on other existing inventions. For example, you couldn't invent a wagon if wheels hadn't already been invented. The fact that you already have wheels *enables* you to invent the wagon. Wheels are an "enabling technology" for the invention of the wagon.

This exploring activity can be introduced in different ways. One way is for the teacher to demonstrate the exploration to the whole class or a small group. Throughout the demonstration there can be class discussion to ensure that all students understand the concepts and terms used in the file. Another way is to have students work in pairs at the computer. Prepared written lessons may be helpful for students to follow as they do their exploring on the computer. As they go through the lessons they can be instructed to take notes on some of their observations.

Activity 2: Asking Questions

After students are somewhat familiar with the content and organization of the data file, teach them how to use the data and the data management program to answer questions. The exact details depend upon the particular data management program used, and the way the particular data file is organized.

Begin by asking a question you're pretty sure students are familiar with, or have already been studying in class. For example, using the Inventions file, you can begin by asking students to discover Thomas Edison's inventions. Using the *PFS:FILE* program this is a very simple task: With the blank form on the screen, you simply type "..Edison" beside INVENTOR:. The .. before Edison is a way of avoiding the question of how to spell his first name or whether he has a middle initial. As soon as you type "..Edison" and press a key that tells the program to continue, one of Edison's inventions appears on the screen.

As this activity continues, ask progressively more sophisticated questions; that is, questions that require either more complex retrieval techniques or more complex interpretations from the data. For example, help students to narrow their search to focus on important inventions in the textile industry in the 18th century. (Find all textile TYPE inventions invented between 1700 and 1800.)

Above all, encourage students to experiment, to try things out, to discover limitations of the data base, to find questions that will stump their partner.

"There are some advantages to having only one or two computers available for the class—students waiting to use the computer have more time to plan and document their approach to solving the problem."

Activity 3: Defining Your Information Needs

After students are familiar with the data base and know how to retrieve selected information from it, they can learn to apply these skills in solving problems. The purpose of Activity 3 is to get students to define the information they will need in order to answer a question or solve a problem. Try to word the problem statement in such a manner that there is no single "right" way to go about solving it. For example, students might be asked to identify a single invention or group of inventions that make possible today's instantaneous worldwide communications capabilities, and to provide data to support their argument. There are many ways to go about analyzing this question using the Inventions data base. Some students may use the information on impact of inventions, while others may look for enabling technologies that are common to many recent communications inventions.

Encourage students to break the problem down into smaller problems or questions, and write the questions in their own words.

Students can work in pairs at their desks as they plan the information needed to answer the question. There are some advantages to having only one or two computers available for the class—students waiting to use the computer have more time to plan and document their approach to solving the problem.

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Worksheets are beneficial in helping students plan the information they will get from the file to help answer the question or solve the problem. They need to decide how they will search for the particular data needed, what data items from the file should be printed out, what order the list of data should be printed in, and other details about the formatting of the list.

After students have planned their printouts, they can go to the computer and use the data management program to get the data they have planned.

Activity 4: Interpreting and Debugging

Whether you're a fifth grader studying history, an economist working for the Federal Reserve Board, or a businessperson making a business decision, ***you never get exactly the right information you need to solve a problem in your first attempt.*** In Activity 4, students examine the printout of information they have obtained to analyze how well it helps them answer their question or solve their problem.

"Whether you're a fifth grader studying history or an economist working for the Federal Reserve Board, you never get exactly the right information you need to solve a problem in your first attempt."

Figure 6 shows one student's first attempt at getting a printout of information to help answer the question about communications inventions. It very nicely lists communications inventions in order by year. However, it doesn't provide the information needed on either the impact of the inventions or the enabling technologies. The student minimally needs the information about the IMPACT: of the invention in order to understand how a particular invention affected our ability to communicate.

Again students can work in pairs at their desks, interpreting their printouts and trying to use the information to answer their questions. Usually they need to go back and get at least one more printout before they have what they need. Figure 7 shows a second attempt, this time including the information about impact of the inventions.

Encourage students to continue analyzing their printouts and gathering more information until they are able to interpret the data in a way that enables them to answer the question or refine their original hypothesis.

Activity 5: Updating the File

A wonderful characteristic of computerized data files is their updatability. Unlike a textbook, reference book or other printed material, a computer data file is very easily modified to suit your particular needs. For example, suppose you want your students to learn more about inventions related to use of energy sources such as coal, oil, solar, wind or atomic energy. Students can research inventions such as the waterwheel, turbine generator, windmill, solar furnace, nuclear reactor, etc. Each pair of students can gather information on one invention and add the data to the Inventions file. The whole class then has a richer collection of information on energy-related inventions to use in their studies.

Activity 6: Projects

After students have been led step-by-step through the first five activities, they should be ready to proceed on their own to use the file for a project. Ideally their project will result in a useful product for other students, the school or neighborhood community. Here are some example student projects using the Inventions file:

1. Prepare a chronological list of inventions in a subject area such as Information Processing or Agriculture. Show the enabling technology for the inventions on your printout. Analyze the relationships between the enabling technologies and the inventions they made possible.
2. Impact of inventions. Prepare a chronological list of inventions of a particular TYPE such as home/leisure or transportation. Include in your list the IMPACT data. Then interview some older people (the older the better), and ask them for their opinion as to how these inventions changed their lives or the lives of others. Can you summarize this information by selecting three inventions that have had the greatest impact on people or society?
3. Inventors. Prepare a list of inventors, grouped by nationality. Do you see any patterns in the types of inventions made by people from a certain nation? Do you see any patterns in the dates of the inventions that came from certain countries?
4. The effects of war. Find out the years of wars such as World War I or World War II. Look at the inventions made during those periods. Did the wars affect the kinds of inventions made?
5. Clustering of inventions. Examine a chronological list of inventions. Do you see any periods of time when there were a lot of inventions or a collection of related inventions? Find out more about those periods of history and see whether you can find a reason for this. Is it related to the enabling technology that was present?

COMMUNICATIONS INVENTIONS

YEAR	INVENTION
0105	Paper
1450	Printing Press
1796	Electric Battery
1824	Electromagnet
1826	Braille
	Photography
1837	Morse Code
1844	Telegraph
1867	Typewriter
1868	Electric Vote Counter
1869	Stock Ticker
1876	Telephone
1878	Microphone
1894	Motion Pictures
1896	Radio
1904	Vacuum Tube
1923	Television
1937	Xerography
1948	Transistor
1956	Videotape Recorder
1962	Satellite Communications

Figure 6.
Student's first attempt at getting information to answer the communications question.

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COMMUNICATIONS INVENTIONS

YEAR	INVENTION	IMPACT
1876	Telephone	Allowed for a global network to convey sound. Local, long-distance and overseas telephones reach 96% of the places in the world.
1878	Microphone	The microphone is the foundation for much of the audio communication field. It is still used widely today.
1894	Motion Pictures	After refinements, led to the motion picture or movie industry.
1896	Radio	Made it possible for the first time to communicate a message instantly to thousands or millions of people at the same time, over long distances.
1904	Vacuum Tube	The vacuum tube was the foundation for electronics for 40 years. It has been almost completely replaced by the transistor, except in certain special-purpose applications, such as picture tubes in TVs.
1923	Television	Made it possible for the first time to communicate pictures and scenes to thousands or millions of people. Most effective means of communication ever devised—"the eyes and ears of the world." Force for education, enculturation, political persuasion and merchandising.
1937	Xerography	First xerographic copier was marketed by the Xerox Corporation in 1960 and has since grown at an astonishing rate. Completely replaced the need for retyping a document, thus saving time and labor.
1948	Transistor	It has supplanted the vacuum tube in electronic equipment. Transistors are used in radios, TVs, computers, hearing aids, etc. They revolutionized the development of the computer.
1956	Videotape Recorder	Provides good storage of program material and an advantage over film. Used extensively to tape programs for rebroadcasting later. Also used for instant replay.
1962	Satellite Communications	Communication satellites provide a major part of the world's global communications. They allow instantaneous transmittal of information and pictures.

Figure 7.
Second attempt at getting communications information.

6. Prepare a list of inventions that improved travel by land. What is the most recent invention in the file related to land travel?
7. Trace the development of guns over time. What was the first gun invented and when? Show that guns have become more powerful over time.
8. Many inventions became possible only after people learned how to turn oil into products such as gasoline and diesel fuel. Which inventions depended on oil refining and when were they invented?
9. What inventions contributed to the early Industrial Revolution in England in the 18th century?
10. In what ways did the invention of the steam engine and the refrigerator change the ways we prepare, distribute and use food?

STAGE 2: BUILDING FILES

After students know how to use data files, they will want to learn how to create their own. When students build their own files, they learn and apply skills such as:

- Analyzing the problem to be researched
- Planning their research
- Locating sources of data
- Gathering data
- Categorizing events
- Ensuring accuracy of data
- Organizing data
- Entering data into a computer

Creating files can be a class project, where each student or pair of students gathers and enters some of the data into the computer file. The end result is a file that everyone can use.

Examples of Files Students Have Built

- **American Presidents**
  Ten pairs of students each do library research on four U.S. presidents. They gather the data, organize it on paper, check each other's work for accuracy, key the data into the computer, and before they know it the whole class has created a complete data base of information on presidents. The information is then all there, in an organized and accessible form, for anyone to use in future writing assignments.
- **Local History**
  Students gather information from community members, local libraries and historical societies, and create an organized reference source on the history of their own town or city's events, places and people. Some classes donate their files to the local library for others to use and update.
- **Community Service**
  Students help local community service agencies by creating files of information about their services, service areas, resources, who they serve, how to contact them, and other needed information.
- **Countries of the World**
  Four sixth grade classes each choose a continent and build a file of data on each country in their continent. The file can be used to compare countries and continents in terms of factors such as natural resources, education levels, and per capita income.

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- **Science Labs**
  Students organize and interpret the results of their laboratory experiments by building and using data files. They compare findings by having all students' results in the same file format.

STAGE 3: DESIGNING FILES

Since the design of a file must take into account how the file will be used and how the original data will be gathered, students' experiences in Stages 1 and 2 provide them with important enabling skills for Stage 3.

When students work together in small groups to design their own files, they develop and apply skills involved in:

- Project planning and small-group decision making;
- Problem analysis and interviewing;
- File design, including content, format, screen layout, etc.;
- Testing, debugging and revising;
- Data gathering and data entry; and
- Using files.

How to Select Data Management Tools for the Classroom

There are hundreds of different data management programs available on the market for most personal computers. Better ones are being created every day. Here are some of the characteristics to look for in choosing a data management tool for students to use in science, social studies, language arts and other school curriculum areas:

1. **Ease of learning.** It is important that teachers and students be able to concentrate on the subject at hand and can manage their own information. The technical details of using the program shouldn't get in the way. A teacher who is concerned about teaching history doesn't want to spend two weeks teaching how to use the software before students can access the history information. Students should be able to begin retrieving selected information from a file after just a few minutes' orientation to the software and the data file.

2. **Ease of use.** Students shouldn't have to memorize a lot of computer commands or wade through complicated menu sequences. Be willing to give up some fancy features in exchange for simplicity of operation.

3. **Flexible formats for data.** Teachers and students need to be able to experiment with many different kinds of data files for many different purposes. The example files shown in figures 2-5 are quite different. Some have a lot of text, while others are primarily statistical data. The program should be flexible in accepting a wide range of file information, from one-digit code to a long paragraph of text, without restrictions on length, type or number of entries (fields) in a record. Many data management programs can be eliminated from consideration on this factor alone.

   There are now data management programs for the Macintosh (e.g., *Filevision* and *MicroSoft File*) which enable you to have pictorial data items as well as text and numbers. In the Inventions file, for example, we could have included drawings of the inventions or pictures of the inventors. When hardware and software with this capability are available in schools, it will greatly enhance the value of data bases for learning.

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4. **Flexibility in naming data items.** It is important for students to learn to communicate ideas and information clearly and accurately. They shouldn't have to work with obscure or cryptic codes for data items. The program should say, "Number of games won this year," not "#GW" or even "#GAMWON." Programs that restrict data item names to a limited number of characters are undesirable.

5. **Files of meaningful size.** Students need—and like—to work with real data files, not "pretend" files. This means, at the present time, that a single file should be able to contain at least one disk's worth of information. For example, our Inventions file contains three pages of information on each of about 170 inventions, and takes up almost an entire Apple II disk. Thus, especially for files with a lot of text in them, choose programs in which the files are on disk while you work with them (e.g., *PFS:FILE*), rather than in the more limited memory of the computer (e.g., *AppleWorks*).

   The cost of large storage devices is dropping quickly, so in planning for students' use of data bases, be prepared to take advantage of much larger data base storage capability than most classrooms have at the moment. Clearly a file containing thousands of inventions, rather than the 200 or so in our example, would make possible a much richer array of problem-solving activities.

6. **Ease of manipulation and retrieval.** Students need to be able to very easily retrieve from the file a particular piece of information or collection of information that meets specified criteria (e.g., "All the presidents who were born in Virginia" or "all Republican presidents who were elected before 1890").

7. **Control over the way information is presented.** Students need practice in preparing information in a way that communicates effectively. They should be able to tell the program to print the selected information in the form of a graph, chart, table or list, sorted alphabetically or numerically.

Less Important Features

In exchange for ease of learning, ease of use and flexibility of format, certain capabilities in a data management program may be sacrificed at present. Speed of retrieval and sorting, for example, are less important for our purposes than they might be in a business office. Some of the more powerful data entry features such as ability of the program to compute entries or automatically verify accuracy of data formats may also be eliminated in the trade-off for ease of use.

Summary

Opportunities for student inquiry, problem solving and skill development with data bases are endless, and we are just beginning to explore the pedagogical, curricular and technical issues involved in exploiting the capabilities of computers for these purposes. The hardware and software tools to use are available now, and are improving rapidly.

[Beverly Hunter, President, Targeted Learning Corporation, Amissville, VA 22002.]

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Do You Really Need a children's Data Base?

by
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Each month, as I leaf through the latest crop of educational computing journals, I find new children's versions of adult productivity tools—scaled-down word processors, data bases, and even a spreadsheet.

I haven't used these children's tools. As a classroom teacher, I lacked the funds to purchase two versions of applications software—one to meet my professional needs and one for my students. My learning disabled junior high students readily learned to use the same software that I used, never realizing that the adult software they've learned with ease is, according to the software publishers, inappropriate for them.

Now that I'm a computer lab coordinator and instruct both teachers and students, I find it easiest to teach everyone the same word processor, the same data base, and so on. The teachers are relieved that they don't have to learn two versions of each applications program. And the students, instead of merely hearing about how adults use software, are using adult software themselves.

Data Base

Scott, a 14-year-old with numerous academic and social disabilities, possessed a phenomenal interest in and memory for information about airlines. I wanted to use Scott's interest as a means for teaching him to use our new Apple II+. Lacking a software budget, I phoned an acquaintance and asked to borrow from his substantial software library. He gave me *PFS: File*.

Scott's classmates enviously watched him typing at the computer and asked if they could write their book reports on the computer. They created a data base of their book reports and I used *PFS: File* to keep special education records.

Third grade teacher Myra Helmer recently learned to use *AppleWorks*—an integrated word processor, data base, and spreadsheet—at an adult community education class. She returned to her classroom and set up a simple data base for her students to use. The fields (categories) were Name, Time Arrived, Lunch (hot or sack) and Library Books (number checked out). As the third graders arrived in the morning, they entered the data.

Helmer then showed her students how to sort and calculate the data. Each day a student delivered one printout to the office (the hot lunch count) and one to the library (book count). Helmer included the time category so that students would practice their clock-reading skills. They learned to sort their names chronologically on the basis of the time category and thus learned even more about time.

Within two days of using the data base, Helmer's students began suggesting new fields to add, and throughout the remainder of the school year the third graders expanded and changed their data base often as their interests and academic studies changed.

Word Processor

My junior high students and I loved our first word processor, *Bank Street Writer*. But the adults I taught disliked switching modes for writing and cursor movement. So I learned *Zardax*, a full-featured word processor that allows simultaneous composing and editing, and began teaching both adults and children to use it.

I first taught children to use *Zardax* in a summer program for grades one through six. One first grader, Shawn, couldn't spell the words he wanted, so he dictated his stories to me while I typed them into *Zardax*. Shawn was the first to learn to print out his file and he subsequently taught his classmates to print.

At Tanana Junior High, all students and many of the teachers have learned to use *Zardax*. The journalism students use *Zardax* to write the school newspaper. They format the text into narrow, justified columns to make their newspaper look just like the city's.

A special education teacher, Skip Via, has developed a computerized IEP with *Zardax* and is teaching other special education teachers to prepare students' individual education plans with it.

Now that the school district has purchased a licensing agreement that permits every teacher to have a copy of *Zardax* for the classroom, many more

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teachers and students will use this versatile writing tool.

"... students readily learned to use the same software that I used, never realizing that the adult software they've learned with ease is, according to the publisher, inappropriate for them."

Spreadsheet

Second graders were the first students in Fairbanks to use a spreadsheet program. Students and staff members at Immaculate Conception School were involved in a fund-raising activity. Second grade teacher Doug Toelle volunteered to keep an ongoing record of each class' earnings. Toelle created a simple file with *VisiCalc* and taught his students to enter the figures as children from each class came and reported the day's earnings. Toelle and his students printed and delivered frequent progress reports to the individual classes and the total figures to the office.

Students in Jim Ranney's economics classes at Lathrop High School learn to manage their finances before they enter the work force, using *AppleWorks'* spreadsheet to create a personal budget. They're given a fixed income (that of a clerk at the local utilities company) and must find an apartment and account for every penny—down to the price of the salad they prepared for dinner and the gas they use to commute to work. It's hard work writing all the necessary formulas, but once their format is in place, students linger for hours after school in the computer lab, trying to squeeze just a little more recreation money out of their budget.

How Do You Teach Students to Use Adult Software?

Preparation

You must be thoroughly familiar with the program yourself before you begin teaching your students. Most adult programs provide fewer—or less helpful—screen prompts than children's programs do.

"... third graders expanded and changed their data base often as their interests and academic studies changed."

Forget about copying sections of the manual to give students. Don't bother making copies of the tutorial disk for them. Too much reading is involved and too many superfluous details are presented. You must begin by teaching only the bare essentials.

Provide an appropriate context for learning to use the software. Teach students to use a spreadsheet during a unit on the stock market, when they can use it to keep track of the profits and losses their "investments" earn. During a unit on cultural heritage, students could learn to use a graphing program to make a pie chart showing their national origins. There's no reason to divorce computer skills from the rest of the curriculum—and obvious benefits to forming an alliance.

"Students in ... economics class learn to manage their finances before they enter the work force, using ... a spreadsheet to create a personal budget."

Presenting

If you're faced with the task of teaching all your students on a single computer, first present new information to students in a group. Older students can take notes or refer to a handout; younger students should be given a turn at the computer during the presentation. Schedule time for students to practice later alone or with a partner.

Some teachers present new information to the entire class. Students must take notes to use later during the time they spend at the computer. Others present new information to groups, giving each child a chance to practice then and another time slot later to practice alone or with a partner.

I usually teach in a computer lab. Giving oral instructions, I guide students through the steps of using the program. When teaching primary students, I make

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note of the commands on the chalkboard or a wall chart. I give intermediate-grade and older students a handout that recaps the instructions succinctly. I'm often not available to help the older students the next time they visit the lab: with a good handout, they can work independently.

Handouts

When creating a handout for students, hone it down to the absolute minimum number of instructions. Precede each set of instructions with a heading—"How to boot up the program," "How to create a new file," "How to write a formula," etc. Beneath each heading, list and number the instructions. As you gain experience teaching the program, you'll discover common pitfalls, and you can include advice for escaping. For example, in *AppleWorks* sometimes you can't move the cursor and the computer beeps incessantly. In my *AppleWorks* handouts, I include a section titled "What to do if the computer just beeps at you."

"I like to tell students about the adults in our community who use the same software that they're using—the author who writes fantasy novels..., the contractor who uses a spreadsheet..., the scientist who catalogues his specimens..."

Peer Assistance

Encourage your students to help one another. Once they learn that it's all right to work together, they progress faster (and deplete less of *your* energy) than if they are required to work silently. My colleagues and I work together too, sharing teaching hints and handouts, observing one another, and occasionally team teaching.

The Rewards

I like to tell students about the adults in our community who use the same software that *they're* using—the author who writes fantasy novels with *Zardax*, the contractor who uses a spreadsheet to record and project his building costs, the scientist who catalogues his specimens with *AppleWorks'* data base. And the students sit up a little straighter and regard their screen display with awe as they realize that they're doing the same thing adults do.

Productivity Tools in My Software Cabinet

(for Apple II family computers)

- *AppleWorks* integrated spreadsheet, word processor, data base, published by Apple Computer, Inc., $250. A lab set of 10 student manuals and 10 copies of the *AppleWorks* disk costs $995.
- *Curve Plotter* and *Master Chart* graphing programs, published by Spectral Graphics Software, 6333 Pacific Ave., Suite 256, Stockton, CA 95207, $29.95 for one or $44.95 for both programs.
- *Fontrix* extended-screen graphics system (the sophisticated, versatile precursor to *Print Shop*), published by Data Transforms, Inc., 6161 Washington St., Suite 106, Denver, CO 80203, $95 plus $20 for additional Fontpaks (disks containing additional character sets and graphics).
- *Zardax* word processor, published by Action-Research Northwest, 1142 Marine View Dr., S.W., Seattle, WA 98146. List price is $210 but is rumored to drop soon. Discount vendors sell *Zardax* for as little as $100. Contact Action-Research Northwest for information about a district-wide license.

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SOFTWARE TOOLS

A One-Semester Secondary School Computer Course

by
John Bromley and John Lakatos

Why Another Kind of Course?

It is clear that increasing numbers of people want and need to use a microcomputer. Students, as a group, are no exception. And, like the general population, their precise needs may vary; not all students are ready to learn—or need to learn—a programming language.

Enter Software Tools, a new one-semester high school course! The goal here is for students to learn to use the computer as a tool by becoming familiar with a variety of commercial software programs. It was designed to allow even less academically able students to succeed and to develop confidence in their ability to use a computer to do useful work. No prerequisites were set for the course (although we recommended that students take typing first), and the level of mathematics in all examples used was kept low in order to encourage reluctant math learners.

The course proved very popular with students in our school and in its first year has generated an enrollment of 107 students (27 percent of the school's population)!

Course Outline

I. Data Base System
  A. *PFS: File*
  B. *PFS: Report*
  C. *PFS: Graph*

II. Word Processing Systems
  A. *Apple Writer IIe*
  B. *Sensible Speller IV*

III. Spreadsheets
  A. *The Spreadsheet*
  B. Topics
    1. Design of Sheet
    2. Use (What If?)
    3. Saving and Printing
    4. Replication
    5. Functions

IV. Apple Operating Systems
  A. DOS 3.3
  B. Pascal
  C. ProDOS
  D. The Law and Disk Protection

V. Telecommunications
  A. Hardware
  B. *Data Capture IIe*
  C. Information Utilities—*The Source*

VI. Integrated Software
  A. *AppleWorks*
  B. Topics
    1. Data Base
    2. Word Processor
    3. Spreadsheet
    4. Clipboard

VII. Drawing and Graphics
  A. Logo
  B. *Mouse Paint*
  C. *Print Shop*
  D. *Micro Illustrator*
  E. Printing and Saving Graphics

Course Requirements

Software Tools is designed to be lab oriented. Students begin using the computers on the first day of class and spend approximately 85 percent of the total class time using them (the other 15 percent is used for lecture, audiovisual presentation and student evaluation). You need four important items to begin this kind of computer course.

- A computer lab with a low student/machine ratio (our ratio was 1.6 students per Apple IIe, but a ratio of two to one should work almost as well).
- Sufficient copies of software to allow all machines in the lab to run most programs simultaneously. This is less costly than it might seem, as many software companies now offer multiple copy discounts for school use. Information on prices and availability changes often—it is important to find out the current pricing policy of each publisher.
- The teacher must have worked with each of the programs in order to develop experience and confidence with them. (We spent many hours after school developing this experience.)
- You will need to reproduce command charts and other notes about each program; we found no suitable textbooks.

Creating such a course is not an easy project, but student satisfaction and enrollment has made it more than worth the effort.

Programs Used

This section details the programs we used with Apple IIe computers. If your lab doesn't use Apple IIe's, different programs will have to be selected. Nevertheless, the rationale and descriptions should be helpful.

I. Data Base

It was important that the course start with simple programs and work toward more complicated tools as students' confidence increased. For this reason we selected the *PFS* (Personal Filing System) series of programs for our first unit. Students found the programs easy to learn but powerful enough for most of their perceived uses. The manuals for

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PFS: File, PFS: Report and *PFS: Graph* are well written and provide good instruction for the programs.

We started computer use the first day by encouraging students to search a data base created with *PFS* that included the names, grade levels, student numbers and computer course enrollment of all the students in the school. They first searched for their own name. The excitement of finding that the computer "knew" them was a good way to start the course. Students went on to create their own data bases—address books and listings of personal tape cassette collections were both popular—and then to experiment with different report and graph formats.

II. Word Processing

We decided to use *Apple Writer IIe*, a very powerful and flexible word processor with a relatively simple editing and printing command structure. A useful printed tutorial chapter is included in the User's Manual. During this unit a number of students also had time to explore the "electronic dictionary" *Sensible Speller IV*, and used it to check and correct the spelling in their work. Students tell us that this unit is the most useful one of the course. Other teachers in the school comment on how nice it is to receive typed essays and reports.

III. Spreadsheets

We chose *The Spreadsheet*, a program modeled after *VisiCalc*, but with a simpler command structure for printing, loading, saving, etc. The manual includes a 90-page tutorial on the command structure of the spreadsheet.

The real challenge in teaching about this software tool (and to some extent all the other programs) is to design an interesting assignment/project. Most students have never seen a spreadsheet and have little interest in learning the complexities of entering formulas, etc. We found that these three assignments motivated them.

- Seniors developed a budget for going off to a college or university. They used catalogs and tried to keep the budgets realistic.
- Younger students imagined that they were running a record/cassette store and developed a balance sheet for their store. These profit/loss sheets were less realistic than the college budgets, but were defended by the students with vigor.
- Students developed a spreadsheet model that would calculate their current GPA (Grade Point Average).

IV. Apple Operating Systems

This unit was integrated throughout the course by necessity. The *PFS* series saves its data on a Pascal-formatted disk, *The Spreadsheet* uses Apple DOS 3.3, and *Apple Writer IIe* now uses the new Apple ProDOS format. Since students were required to create files on their own disks, the different (incompatible) formats presented many opportunities for explanation and learning. Most of this instruction occurred while debugging student problems, and much of the topic was taught one-on-one or in small groups as the information was needed. This unit turned out to be the hardest for most students—we were always helping students who wanted to save a ProDOS file on a DOS 3.3 disk.

"The goal here is for students to learn to use the computer as a tool by becoming familiar with a variety of commercial software programs."

Another topic we discussed throughout the semester was disk copying, disk protection and copyright laws. Almost every day we had to explain that, "No, you can't copy that disk. The authors and publishers of that software deserve to make some money from their investment." Following this "no copying" rule involves a lot of enforcement, as well as educational effort.

V. Telecommunications

Students practiced less with computer telecommunications than with other units, because of the expense of hardware, international long distance charges, and information utility time. We used *Data Capture IIe* for this section of the course. The program has good screen menus and is relatively easy to use. We do, however, feel that telecommunications is an important aspect of the future of computing and are planning to expand the time devoted to this activity. Perhaps the development of bulletin board and information utility simulators will help reduce "on line" charges.

VI. Integrated Software

Another growing field of importance in microcomputing is the use of integrated software. We chose to introduce students to *AppleWorks*, which includes a data base, spreadsheet, word processor, and a "clipboard" that allows the transfer of files between the modules. This program package comes with a two-disk, interactive tutorial. Also provided is a thick tutorial manual and a disk of sample data with which to practice. By delaying the introduction of the integrated package until late in the course, students had the chance to develop a good feel for the generation of the different elements in the program. Students were required to demonstrate their mastery of the program by creating a small data base and spreadsheet model and then transferring both to a letter they had written with the word processor.

VII. Drawing and Graphics

The finale of the course, and the part most enjoyed by students, was a unit on computer graphics. Students worked with at least two different graphics programs. We had available *Micro Illustrator* (the KoalaPad program), *Mouse Paint, Print Shop* and Logo. None of these programs, with the exception of Logo, which we used as an extra credit assignment, require much instruction. The graphics programs are easy to use without manuals or tutorials. Student assignments asked students to draw and print a graphics image with at least two of the listed programs.

Student Evaluation

One of the least rewarding jobs of a teacher is assigning grades. In this course the evaluation is made more difficult by the wide range of student abilities. We calculated the grades based on the following system:

50%—Printout of completed assignments
20%—Written quizzes on programs

20%—Practical quizzes using programs
10%—Student notebook of handouts, printouts, etc.

Of these, the practical on-computer quizzes are innovative. These exercises took place about once every two weeks. Students were given a task or problem on the current topic and were required to find a solution within a time limit. These problems were designed to be easily graded by checking the computer screen at the end of the allowed time. Students could use notes and command charts, but could not ask questions of their friends. Since only about half of the class could use a computer at a time, the other half was sent to another classroom for half of the period, and then the groups swapped places.

Students seemed to enjoy the change of this type of practical quiz. They also learned that they could not learn how to use a program by just watching their lab partner. We found in general that the computers were highly motivating; students made quite good grades in the course—85 percent of the grades were either A's or B's.

Outcomes

In addition to teaching students how to use several different software tools, our course had other positive outcomes. A number of students who took the course decided that computers were not as hard or mysterious as they had thought. As a result, many have now enrolled in Pascal or BASIC language courses. We were also pleased to have a much higher percentage of young women enrolled in the course than we usually have in programming classes (40 percent vs. 25 percent). Perhaps early success in the Software Tools course will encourage higher female enrollment in computer language courses.

We feel that this course offers a very practical kind of computing literacy. While the course is somewhat costly in terms of computer and software resources, it seems worth the extra effort required to introduce a new course in a school. It has been an enjoyable course to teach. And students say they found it practical and useful, as well as enjoyable.

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Programs Used in Software Tools Curriculum

Publisher & Address	Program	Sample Assignment
Apple Computer Co. 20525 Marioni Ave. Cupertino, CA 94014	*AppleWorks*	Develop a personal data base, simple spreadsheet, and transfer the data to a letter using the "clipboard."
	Apple Writer IIe	Type and print a two-page report; the report should be an assignment from a different class.
	Mouse Paint	Draw a graphics image.
APPLE Co-op 290 S.W. 43rd St. Renton, WA 98055	*The Spreadsheet*	Develop a spreadsheet of about 20 rows by 15 columns, such as a college budget, record store profit/loss sheet or sheet to calculate student GPA.
Broderbund Software, Inc. 17 Paul Dr. San Rafael, CA 94903	*Print Shop*	Design and print a greeting card.
Koala Technologies Corp. 3100 Patrick Henry Dr. Santa Clara, CA 95050	*Micro Illustrator*	Use KoalaPad or paddles to draw, save and print a picture or record album cover.
Krell Software Corp. 1320 Stony Brook Rd. Suite 219 Stony Brook, NY 11790	*Logo*	For extra credit: Write a set of Logo procedures that will draw a picture on the screen.
Sensible Software, Inc. 210 South Woodward Suite 229 Birmingham, MI 48011	*Sensible Speller IV*	Use the program to check the spelling of the two-page required report.
Software Publishing Corp. 1901 Landings Dr. Mountain View, CA 94043	*PFS: File*	Create a data base of at least 25 items.
	PFS: Report	Print the data base using different search and report specifications.
	PFS: Graph	Draw at least two different graphs, entering data directly and reading it from a data base.
Southeaster Software 7743 Briarwood Dr. New Orleans, LA 70128	*Data Capture IIe*	Use program and modem to chat and/or transfer data to another computer.
The Source 1616 Anderson Rd. McLean, VA 22102	*The Source*	Use *The Source* menus to extract information.

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Productivity Tools for the Classroom

by
Shirl S. Schiffman

Unlike the debate often triggered by discussions of CAI or Logo, almost everyone seems enthusiastic about teaching students to use "productivity tool" software, generic packages such as word processors, electronic spreadsheets, data base managers, and graphics packages. Articles regularly appear with suggestions for adapting productivity tools to school subject areas and with nary an accusation that the activities "don't use the full power of the computer," or "there is no research data to suggest they are of any value."

Is this a category of applications for which there are no philosophical or pedagogical reservations? If so, it is undoubtedly because productivity tool software demonstrates so vividly why computers were invented in the first place: to make short work of tasks requiring the manipulation of numbers or text. Who can argue about being able to quickly and easily make substantial revisions in a document with no cutting, pasting or erasing? Who can argue about being able to retrieve a desired name and address from a large data base in a matter of seconds? Or being able to make gorgeous color graphs in the time it usually takes to gather the art supplies? Or being able to instantly recalculate an entire year's budget based upon a higher or lower salary rate?

Nevertheless, classroom use of tool software is not yet widespread, with the possible exception of word processing. Perhaps this is because tool software has only been spotlighted for the last year or so; it takes time for those responsible for designing inservice teacher training and computer-based curricular units to implement new applications. It may also be that the decision makers in school systems have not been presented with a solid rationale for including tools in their computer plans for teachers and students. Indeed, some may question whether the emphasis on tools is the latest fad in instructional computing.

Here are four points to suggest that the use of tool software is as valuable for teachers and students as it is for the millions outside the school system who use these applications daily.

Life-long Computer Literacy Skills

Most school systems would agree that the major reason for providing computer literacy training is to prepare students to function in the computer/information age they will enter upon graduation.

How *do* the majority of people in our society use computers? A study of business, industrial, educational, medical, military and governmental uses of computers suggests four applications that are and will continue to be heavily used: word processing, financial/statistical/numerical data analysis, information storage and retrieval, and the generation of graphics of many kinds, from charts and graphs to complex animated images. These applications enable workers in many professions to do their jobs more quickly, accurately and neatly, and with less frustration.

The use of tool software is an excellent way to model real-world computer applications, partly because the packages are the most widely used applications in society and partly because they give a concrete demonstration of the computer as a labor-saving tool. While the teaching of programming, computer history and technological information may have a place in a computer literacy class, these topics should not be overemphasized at the expense of providing adequate exposure to a wide variety of useful software packages.

Teacher/Student Productivity

Many people remember the first time they sat down to use word processing and rose to say, "How did I ever live without this?" Teachers who have begun to keep class or inventory information in a simple data base program or to use a spreadsheet to maintain an ongoing gradebook often remark, "It takes a little time to get it set up, but it makes the rest of the year so much easier." Quickly creating attractive overhead transparency masters, signs or banners with a graphics package also engenders the feeling that the computer has transformed a time-consuming, sometimes tedious task into a short exercise in pushing keys. Productivity tool software didn't get its name by accident!

Teacher-led demonstrations and hands-on activities are both appropriate strategies for teaching students the function of major software applications and helping them develop confidence in tackling the applications they may encounter in the future. The *best* way to introduce tools is to demonstrate how you use the packages to help you with your instructional and administrative tasks. Teachers might use:

- Word processing to prepare classroom materials and letters to parents;
- Data base management to keep student or inventory information;
- Spreadsheets for recording grades or financial information (book sale or lunch money, etc.); and/or
- Graphics software to create bulletin board illustrations, etc.

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When possible these demonstrations should take place in full view of the students, who will gradually become accustomed to viewing the computer as a tool. If the principal, librarian, guidance counselor or anyone else in the school uses computers, students should be made aware of how the computer helps them—never overlook free, real-life computer demonstrations!

The next step will be to teach students how and when to use the software. Younger children, of course, will begin with very small tasks appropriate for their age and keyboarding abilities. Even young children, however, can begin to learn the value of productivity tool software in an active way. When children have learned to write their names, addresses and phone numbers, for example, they can create a simple data base of information about themselves. The file will be created by the teacher, but each child is allowed to enter his or her own information. In the following example, some responses require only an "X."

```
LAST NAME:          FIRST NAME:          MIDDLE NAME:
ADDRESS:
CITY:                                    ZIP CODE:
TELEPHONE NUMBER:
GIRL:          BOY:
DO YOU HAVE A PET? (YES OR NO):
IF YES, WHAT KIND?   DOG:   CAT:   FISH:   BIRD:   OTHER:
WHAT IS YOUR HOBBY:
```

When completed, the teacher can demonstrate the things a data base program can do to make recordkeeping more efficient. Alphabetical lists can be printed by first or last names, the file can be scanned to locate the telephone number of a particular child, or to locate all children who have cats before a "Why I love my cat" story contest begins. Printouts can be examined to discuss how they might be useful. Parallels might be drawn with real-life data bases the children would understand to discuss how the computer helps people keep accurate, up-to-date records. Also notice that many of these activities support other early childhood objectives: alphabetizing, knowing important personal information, and learning to arrange things in categories. Later, children can be taught to access the data base on their own or in small groups. Middle and high school students, of course, are capable of creating their own data bases for personal reasons (perhaps cataloging a comic book collection) or for class projects. Students might even be challenged to create data bases that would improve the efficient functioning of the classroom, e.g., inventories of instructional materials, books, art supplies, sports equipment, etc.

For upper grade students, the possibilities for using the computer to increase productivity are endless. Journalism students, for example, can use word processing to produce newspapers and yearbooks, data base management to keep track of advertisers, spreadsheets to maintain budgets and conduct forecasts on projected revenue, and graphics software for layout and design. All high school students can benefit by some experience in using on-line data bases such as DIALOG, The Source or CompuServe, which are increasingly being used to increase productivity in the private sector. Economics students assigned to access and interpret stock quotations not only learn about capitalism, but see how corporations and individuals use computers to make faster and better decisions.

Generic Classroom Software

One of the most exciting aspects of using productivity tool software is its wonderful adaptability to the various disciplines of the academic curriculum. But unlike a courseware package which, once used, may sit on a shelf for the next 11 months, productivity tools can be adapted for many other curricular units while simultaneously handling administrative chores! This point, while obvious, should not be overlooked. Although initially more expensive than some educational software, tools are an excellent investment because of their generic nature.

There are many journal articles and books available today with ideas for adapting tool software to school curriculum areas. Beverly Hunter's book, *My Students Use Computers* (1983), for example, has many such suggestions. Software producers are now creating others (e.g., prepared data bases for science and social studies). Here's a suggestion to encourage teachers in all areas to consider how tool software might be used to help students achieve the objectives in their disciplines.

An elementary school librarian, who had the use of only one computer and an inexpensive software package, created a file to store information on the favorite books of the third, fourth and fifth grade students. A separate disk was prepared for each grade level. After teaching the students how to load the program and input the information, students were encouraged to input the following information for any library books they really enjoyed and would recommend to a friend:

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TITLE:
SUBJECT:
AUTHOR:
PUBLISHER: PLACE OF PUBLICATION:
COPYRIGHT DATE:
FICTION: NONFICTION: BIOGRAPHY: AUTOBIOGRAPHY:
REVIEWER'S LAST NAME:
FIRST NAME:
REVIEW:

CALL NUMBER:

Now when students complain that they don't know what to read, the librarian first suggests that they use the data base to scan for a subject they would like to read about, an author they have liked in the past, or the name of one of their friends to see what books they have read. (There is a lot of retrieval in regards to the last category!) This electronic reference assistant often enables the librarian to be two places at once! It's *real* purposes, however, are instructional. First, the creation of the data base reinforces important library concepts (author, title, copyright, etc.). Second, students gain competence and confidence in using an information storage and retrieval system. As public and private libraries become more automated, this skill will become increasingly important.

Thinking Skills

In his book *The Conditions of Learning* (1985), Gagne describes cognitive strategies as "internally organized skills whose function is to regulate and monitor the utilization of concepts and skills" (p. 138). In other words, cognitive strategies are thinking skills that facilitate learning. Using mnemonic devices to remember important information, being able to draw inferences from given data, being able to categorize a large quantity of information so that it is more easily understood and used, breaking down a problem into component parts as a means of solving it, and coming up with many ideas on a certain topic (brainstorming) are all examples of cognitive strategies. Evidence that such strategies have been learned comes when students are able to transfer them to any task for which they would be appropriate.

Massialas and Zevin (1967) suggest two categories of thinking skills: analytical and creative. The two share many attributes, but some distinctions can be made. Analytical skills include an ability to formulate hypotheses, clarify terms and concepts in a problem situation, test the logical consequences of propositions, and generalize from results. Analytic thinking normally involves step-by-step deductive and inductive procedures and operations. Creative thinking, on the other hand, is characterized by the use of hunches, conjectures and intuitive leaps. Creative thinking does not proceed in a step-by-step fashion. Fluency (having many ideas), flexibility (having different ideas), originality and intellectual "playfulness" denote creative thinking.

Do students acquire thinking skills by virtue of using productivity tool software? Empirical evidence is not available to support such a claim. What can be said, however, is that the nature of productivity tool software calls for a substantially different *kind* of thinking about a subject that might otherwise be done. Illustrations of this difference will be presented for each of the four major tool applications.

Data Base Management

Traditional teaching methods often engage students primarily at the knowledge and comprehension levels (Bloom, 1956). Take, for example, a social studies teacher introducing students to the electoral college in a week-long unit. One lesson design calls for four 50-minute lectures followed by a test. The information is presented in an expository form and then questions are solicited to clear up misunderstandings. The students read the appropriate passages in the textbook and answer the question at the end. Although a discussion period is used to encourage students to go beyond the information presented, the lesson is essentially a one-way communication of information.

Suppose instead that the teacher constructs a data base (one record per state) of information from 1960 to 1984 that includes population, number of electoral votes, past presidential voting records, geographic region, major voting blocs, major industries, political affiliation of other elected officials, etc. After an introductory lecture and a lesson on how to use the software, students are assigned in teams to use the data base to answer the following questions:

- Which areas of the country have lost population and which have gained? (Use electoral votes as a guide.)
- Which party has benefited from this population shift?
- Where does the Republican party hold its greatest presidential strength?
- Given the past voting records of the Southern states, what do you predict the outcome of the 1988 election will be if George Bush runs against Edward Kennedy? (Support your answer with statistics.)

In this lesson students are called upon to analyze and synthesize information, to draw inferences, and to make predictions based upon their research. Admittedly they may not memorize much of the content. As John Naisbitt makes clear in *Megatrends* (1984), "We are drowning in information but starved for knowledge." He goes on to say that "information technology brings order to the chaos of information pollution and therefore gives value to data that would otherwise be useless." Data base management software can give students practice in the search, retrieval and analysis strategies required to become skillful users of computerized data banks.

The previous example used a data base created by the teacher. What goes on when *students* are assigned to create data bases, either individually or in teams? Conceptualizing a data base requires breaking a body of information into critical attributes, pinpointing key concepts and eliminating peripheral or nonessential ones. Organizational considerations, both functional (placement

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of the fields on a record according to logic and ease of access) and visual (the actual layout of the record) are also called into play. The benefits of careful preplanning and prototype testing are also made evident.

Spreadsheets

The nature of a spreadsheet shifts the emphasis of a mathematical task from product to process. Using a spreadsheet is a joint project between human and computer: The human sets up the correct relationships and the computer calculates the correct answers. Notice, though, how different this is from how students spend most of their time studying mathematics. As a highly simplified example, consider what goes on in a child's head when asked to solve the following problem:

$$9 + 8 = ?$$

For any but the youngest students, this is a rote memory task, as it should be. What happens, though, when a student is asked to make the computer add nine and eight on a spreadsheet? In this case the answer would be something like this:

SUM the contents of cell B1 and B2 and tell the computer to display the answer in B4

Notice that the answer 17 is no longer the focus of attention. Rather, the task becomes one of creating an equation that the computer can use to add two variables and print the result. The most exciting part is that other variables can now be substituted for instant, computer-generated addition! In short, the activity shifts from arithmetic to algebra; students must think about mathematical relationships instead of getting the right answer.

In the last few years, the math portion of the middle school SRA test has posed questions in which students are asked what they would do to solve a problem instead of being asked for the answer. This reflects the concern of many math educators that students attempt to memorize answers and formulas without understanding what they really mean. Spreadsheet software offers many possibilities in combating this kind of problem.

There is a second advantage in using spreadsheet software. The remarkable "what if?" capability lends itself to having students think about mathematical relationships in an active, experimental way. Suppose a mathematics teacher uses a spreadsheet to demonstrate the interplay of variables that affect compound interest. S/he could ask, "What happens if the interest rate goes up or down? What happens if you leave your money in the bank longer than you had intended? What if the original principal had been a higher or lower amount?" The dramatic effect of watching the computer scroll through two years of monthly interest payments or finance charges adds, if nothing else, considerable motivational appeal. Beyond that, the teacher is able to quickly demonstrate a series of examples to help students grasp the concept of compound interest. Attempting this task with the chalkboard and a calculator is burdensome and time consuming. The haze of mathematical manipulation required to work out an example can also obscure the main idea for some students.

Although spreadsheet software seems to encourage primarily analytical thinking, it should be evident that the result of the "what if?" capability makes possible a creative playfulness with numbers. Spreadsheet software, used for word problems, number puzzles and other activities, allows students to experiment with mathematical ideas, to learn that a problem sometimes has more than one solution, and to spend more time learning about the practical applications of mathematics. Spreadsheets can also be used in science, social studies, economics, health and home economics classes.

Graphics-Generation Software

Graphics software includes packages that produce charts and graphs from numerical data and those that produce illustrations (still or animated) and typefaces. The former category is of particular interest for two reasons. First, it is capable of quickly making abstract information concrete by transforming numerical data into visual images. Second, interpreting information from graphs and charts is a foundational objective for math, science and social studies classes. It is also an essential citizenship skill. Graphics software can be very valuable in preparing instructional materials and activities to teach this critical skill.

For example, students can be asked to interpret graphs created from three decades of census data to identify changes in demographic variables.

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Graphs that show single parent households, per capita income, divorce statistics, etc., can be compared and contrasted to analyze important societal trends. Furthermore, the unique ability of the computer to put the same data into several visual formats (bar or line graphs, pie charts) opens the door for a flexible approach to data presentation that is nearly impossible if graphs must be constructed by hand. Lessons on how data can be made to "lie" through subtly distorted visual presentations can also be learned.

Graphics tablets, light pens and software packages for the production of visual images and text fonts encourage flexibility, originality, and the discernment of the critical attributes in a body of information that must be highlighted in order to produce a coherent, appealing visual. Libraries and language arts, shop and art classes all have uses for the graphics-generation capabilities of the computer.

Word Processing

Writing teachers have already enthusiastically praised the use of word processors as a means of encouraging students to become fluent, flexible, original writers. The ease of revising has paved the way for teaching a creative, multiple-draft approach to writing. This process approach emphasizes stylistic revision (increasing the descriptiveness, concreteness and appropriateness for target audience, etc.) in addition to mechanical editing. Students are encouraged to play with words, to let ideas flow without initial concern for editorial errors. Once the onus of recopying papers is removed, students begin to enjoy elaborating on their compositions. It should be pointed out, of course, that this is dependent upon how the teacher views word processing. If it is presented only as an easy way of making editorial corrections (punctuation, capitalization, etc.), the advantages for encouraging creative thinking skills will be considerably diminished.

Summary

To review, the rationale for including the use of productivity tool software in classrooms is comprised of the following points:

- **To provide life-long computer literacy skills;**
- **To increase teacher and student productivity;**
- **To make generic instructional software available; and**
- **To promote analytical and creative thinking skills.**

The same classroom activity can (and often does) combine all four advantages. Consider physics students using spreadsheet and graphics packages to collect, analyze and report the results of a laboratory experiment. In one activity they are simultaneously (1) simulating how professional scientists use computers, (2) using the computer to improve the efficiency and accuracy of their lab work;, (3) learning an important concept in the physics curriculum, and (4) exercising analytical skills as they adapt the software to the specifications of the lab. How often in education do we get a four-for-the-price-of-one bargain?

For school systems interested in increasing the use of productivity tool software in computer literacy and academic classes, the best step to take is to provide well-designed inservice training workshops for teachers. Teachers should be encouraged to use productivity tool software for administrative and management purposes. Easy access to hardware and software will greatly facilitate such efforts. Then, when the teachers are comfortable users of the software, they will be ready to begin designing activities for students.

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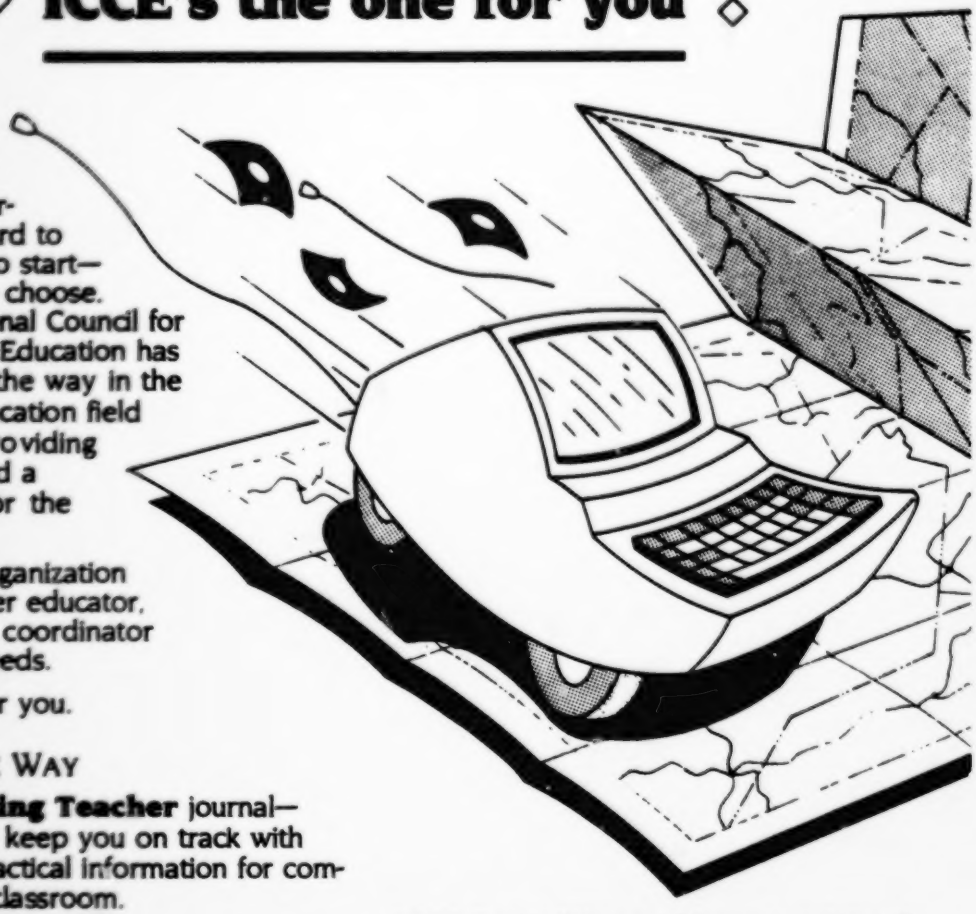

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